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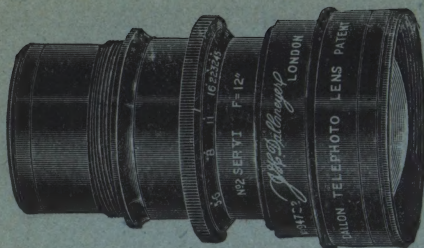
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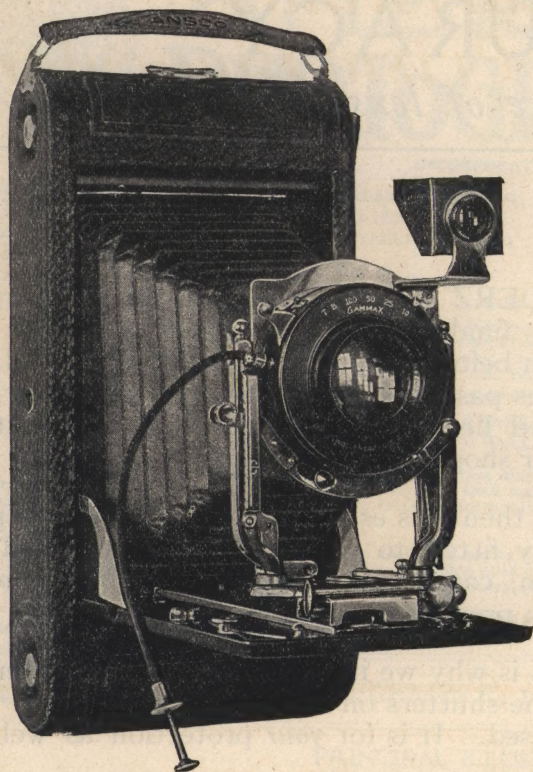
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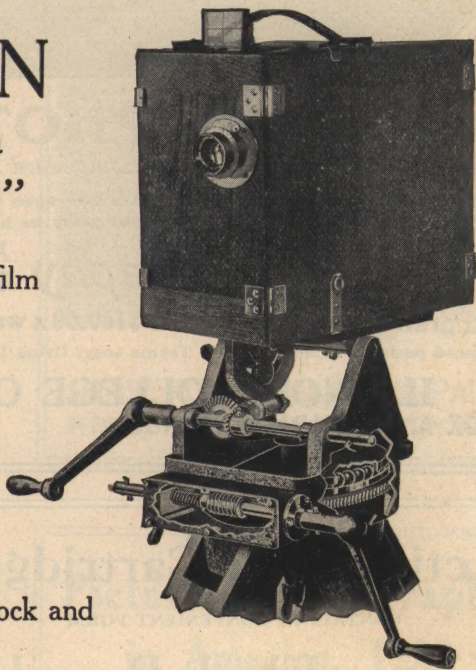
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AMERICAN PHOTOGRAPHY

VOL. XVI

BOSTON, MASS., DECEMBER, 1922

No. 12

CHILD PHOTOGRAPHY IN THE HOME

C. M. HARRIS



TO THOSE of us who are fathers or mothers, or even merely aunts or uncles, to small children, the fascination of the child has, in many cases, been the cause of our introduction to the delights of photography. The little darling who has so recently opened innocent eyes on the world, has gazed wondering into our faces, and the appealing helplessness of the rosy mite has caught hold of our heart-strings and set us wishing with all our souls to preserve some record of each epoch of childhood, so that when our children are children no longer, but men and women grown, we may still, in our declining years, see them as they were when they, and we, and all the world were young.

Photography is obviously the means to this end, and we enter upon it with high hopes and great expectations. At first our hopes seem doomed to disappointment; then follows a period when we are encouraged by an occasional success; and finally, if we persevere, we arrive at a point where success is only occasionally marred by failure.

Constantly in movement, the normal child is a difficult subject indeed, especially under trying light conditions, and since the majority of the most intimate phases of childhood — those for whose preservation we are most eager — are manifested within the home, we must, if we can, provide ourselves with a camera which will give us the greatest efficiency in a poor light with a restless subject. The camera which most satisfactorily fills these conditions is a reflecting camera with fast lens and focal-plane shutter. If we cannot afford the expense of such an instrument, we must make use of flashlight and window pictures, and be satisfied to limit ourselves by the limitations of simpler apparatus.

Only under ideal conditions can satisfactory pictures be obtained with a hand-camera in the home. Outdoors the user of the hand-camera is not quite so badly off, but the constant movement of an active child makes the problem of focusing a hard one, and the reflecting camera, with the facilities it offers for keeping the subject in exact focus right up to the moment of exposure, has tremendous advantages.

The chief aim of the photographer should be naturalness. No attempt at deliberate posing should be made. Very young children can be set in a well-lighted spot near the window. Should the sun be shining on the little sitter, a diffuser can be employed. I have found a piece of blue tracing-cloth stretched taut on a frame 36 inches square, made



THE PICTURE BOOK

C. M. HARRIS

of 1 inch x 1 inch hardwood, very satisfactory, and it also gives very efficient service as a diffuser for flashlight. The frame should be fitted with a tripod socket, and it may then be used on a spare tripod. A reflector is a very useful accessory for lighting up the shadow side of the face. One can easily be improvised from a towel, sheet, or table-cloth hung over the back of a chair. It should be placed a short distance away from the child, on the shadow side, and slightly to the front. If the reflector is too close, the lighting will be unnatural; if too far away, it will have no appreciable effect on the shadows. It must be remembered, too, that the use of a reflector will also serve to cut down exposure.

Older children should be given some object to occupy their attention. They may be pictured very appropriately looking at a picture book, playing at doll's tea party, admiring new clothes they are wearing, playing with a favorite toy, seated in a miniature chair, or in any other way that the photographer feels to be characteristic of the child in question.



THE YOUNG VISITOR

C. M. HARRIS

Care should be exercised in selecting a suitable background. A plain wall-paper or tinted wall will serve admirably, or if the walls are not sufficiently plain, playroom accessories may be used to distract attention from the pattern, and will give a "homey" and intimate effect. Care must be taken to exclude glaring highlights which would tend to distract attention from the subject. All objects allowed to appear in the picture should be of a nature appropriate to the child's occupation.

The much-vexed question of plates versus film is settled for us in advance, for the prime requisite for the kind of work we are now considering is speed, and the extreme speed obtainable in plates is twice as great as that of the fastest film. An exposure of 1-10th of a second will be found ample at $f:4.5$ on a Graflex plate in a well-lighted room.

While the developing formula recommended by the manufacturers for the Graflex



ABSORBED

MARY HEATH

plate is for use in the tray, the writer prefers the tank method. If a pyro formula is preferred, that given in the *AMERICAN PHOTOGRAPHY Thermo Development Chart* will give excellent results. Tabloid Rytol will be found to be a very satisfactory developer for those who do not wish to go to the trouble of compounding their own formulae.

Some especially desirable pictures can only be obtained by the use of flashlight. Don't be afraid of the old bugbears of closed eyes and glaring contracts if you are unfamiliar with flashlight. The first can be obviated by the use of a modern flash-powder of "normal" grade, which burns in about 1-30th of a second; and the second, by using a diffuser, as described in a previous paragraph.

In focusing for flashlight pictures, a strong light, say a 150 or 200 watt nitro lamp, used on an extension, will be found a very material help. A reflector should be used in the same manner as in daylight pictures. The camera must of course be used on a tripod or table. Care must be taken to see that no lamps, or polished surfaces which will reflect the flash, are within range of the lens; and if the point chosen for the flash is in front of the lens,

the latter should be screened. Set the shutter at "bulb." When all is ready, take up your position with the flash gun in one hand and the release in the other, with the diffuser placed between the flash and the subject. Open the shutter, set off the flash, and then close it again. For flashlight work a view or hand camera is just as good as a reflex.

We come now to the making of the print. Since the nature of our subject forces us to concentrate our attention on the sitter, often at the expense of pleasing composition, I have found it best to make all my prints by enlargement. This gives one an opportunity to select the most pleasing arrangement and to eliminate unessentials. I enlarge by artificial light, mainly because it is a more constant factor, and ticket all my negatives with gummed paper showing the required exposure for a given degree of enlargement on a given brand of paper, so that I have no trouble in estimating exposure when making duplicate prints.

In conclusion I would say, be lavish with your plates; don't expect a perfect picture for every exposure; and experiment on your own kiddies first, so that when you come to picturing your friends' families you will not have to humiliate yourself by confessing failure.

I hope that the methods described above, which have been elaborated through the trials and troubles of much experimentation, will prove of service to my brother amateurs. They will give you a basis to work on, upon which you will doubtless in time improve.



ON THE PARK LAKE

Vienna Camera Club

ADOLPH FRITR

PHOTOGRAPHING CHILDREN

MARY HEATH



CHILDREN present a special problem to the amateur photographer, but one well worth solving. Most children may be divided into two classes — those who like to have their pictures taken and those who don't! And they are about equally hard to manage. For if they enjoy being "taken" they pose the moment you appear with a camera, and if they object, much tact is necessary to overcome their reluctance.

My own small daughter belonged to the first class. If I wanted to "snap" her at her play, I had to be very diplomatic. As soon as she saw me with any kodak she would dance to meet me, crying, "Oh, oh, take my picture-taken!" and stiffen into a set pose at once. The only thing to do was to say, "Later perhaps. You go on playing now, for I have to get the camera ready. I'll tell you when I want you to look at me." And much patience was required, for she wanted to see the picture, and it took a little time for her to forget me and really go back to her playing. Then I watched for just the right moment, and pressed the bulb. After which I must remember to say, "Look pleasant, please," or she would not feel that her picture had been properly taken.

With the other class of children, a different method is necessary. Their confidence and interest must be won. Telling a story will sometimes be effective, or showing an intelligent interest in their play; or perhaps letting them "snap" a picture themselves, first. It takes a little practice to focus your camera and tell a story at the same time, but it is possible! Then watch your subject, and be ready to press the bulb just as soon as you get the right expression. It is well to make several exposures, as one might not be a success.

Outdoor snaps are not so hard a problem as indoor pictures. Select a room with light walls and have as much diffused light as possible. If the exposure is a little too short, do not overdevelop the film, but intensify it later. "The Rail-Road Superintendent" was taken in a room with one north and one east window, light walls and with a white door as a background.

If there is much arranging of background, windows, reflector, etc., to be done, do it all before calling the child. (I even use a big doll for rough focusing). A child soon gets tired and restless, and then it is difficult to get a good expression.

Best of all, when you catch a child absorbed in his work or play, go get your camera and snap him before he even suspects your presence!

DEVELOPING WITH FERROUS OXALATE AND WHITE LIGHT

DR. HELMER BACKSTROM, STOCKHOLM



T the time when Lüppo-Cramer found that by treating with some substances, mostly dyestuffs, one could desensitize silver bromide to such an extent that developing could be done in comparatively strong light, this communication caused much interest, and the method has been used by some photographers with great advantage. Lüppo-Cramer suggested phenosafranin as a desensitizing substance, and this has since been used to a great extent, but through the work of several later investigators many other desensitizers have been announced.

It would have been very strange if such a characteristic effect had not been observed earlier by other investigators, and there has been some search for predecessors to the phenosafranin method of Lüppo-Cramer but in vain until now. I think, however, that in some American articles of 1889 and 1890, I have found that a method was already known for development in white light. In the present paper I will make a summary of the American original texts and then publish my own experimental tests concerning the method.

In the *American Annual of Photography* for 1890 there is an article by Dr. J. J. Higgins on white light development. This article begins with a report of another one by Mr. E. L. Wilson in *Wilson's Photographic Magazine* of July 6, 1889, where Wilson describes an interview with Higgins and gives an account of the remarkable method of development of the latter. The reporter tells how a Seed plate of the highest sensitiveness is exposed one second behind a glass positive of a Madonna by Raphael to the light of a gas flame ten feet away. The plate is then immersed in the previously prepared developer and covered for two minutes. After that time the cover is withdrawn and the development continued in the light from the gas flame, the operator, however, standing between the flame and the plate, thus protecting the latter from direct light. After some time this precaution



LANDSCAPE
WM A. ALCOCK

can be neglected and the plate be looked at in the direct gas light. No fog was perceptible at first, but when the plate was held one foot from the gas flame, after five minutes fog appeared and soon destroyed the negative.

"Here is a discovery which will prove a great boon to many people and save lots of good eyes from destruction if it is followed," says Wilson. And now, what is this wonderful mixture? It is simply the old and well-known ferrous oxalate, which gets the praise of producing "the very finest of negatives, staining neither hands nor plate."

In his article of 1890 Higgins gives an account of Wilson's article just abstracted, and says that he has used this method for five years (apparently from about 1885) and that he has developed thousands of negatives in this way, and then he describes the method once again without giving anything new.

Following up, this, I have made some investigations of the desensitizing properties of the ferrous oxalate developer. I used the following formula for the mixing of the developer, which I took from Eder's "Rezepte und Tabellen für Photographie und Reproduktionstechnik," Halle, 1917.

- | | |
|--|---------|
| A. Potassium oxalate..... | 100 g |
| Water | 400 ccm |
| B. Ferrous sulphate (green vitriol)..... | 100 g |
| Water..... | 300 ccm |
| Sulphuric acid | 5 drops |

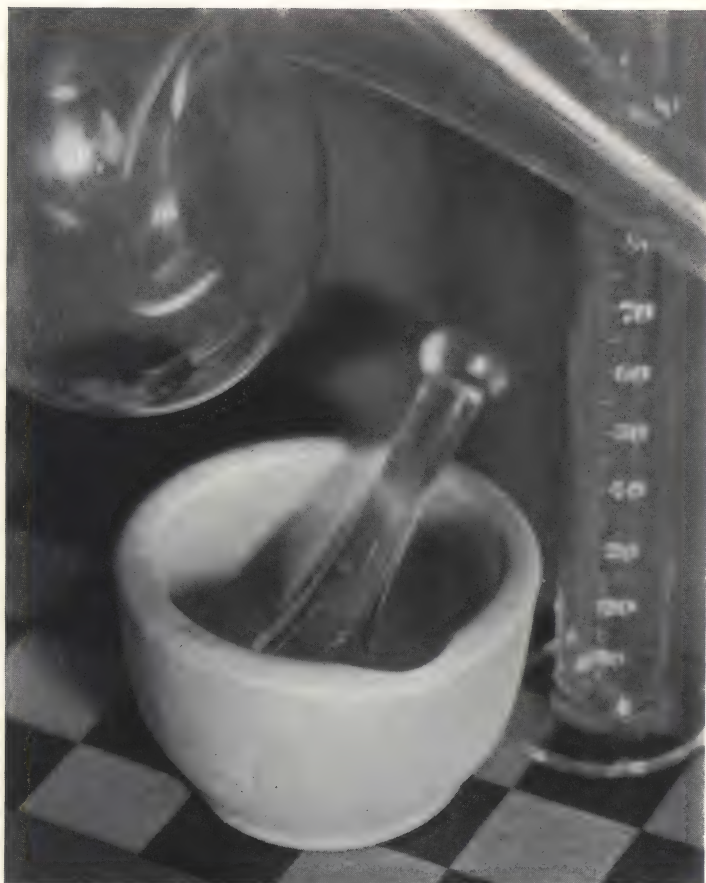
Just before use four parts of the oxalate solution A are mixed with one part of the iron solution B. The addition of potassium bromide is unnecessary and I did not use it, but it is recommended, when much overexposed plates are developed, to add a few drops of 10 per cent potassium bromide solution in order to retard the development.

A first experiment was made in the following manner: two unexposed plates of the same make (Wellington) were laid, one in the developer and the other in water. After five minutes a strong lamp in the room was lighted, both the plates were exposed about one minute and afterwards developed together in the same developer. A marked difference was observed between them. The plate which had been immersed in the developer from the beginning darkened but slightly, while that immersed in the water was blackened through and through.

As the ferrous-oxalate developer is red colored, it might be possible that it acts as a filter and not as a real desensitizer. This had been the case with other predecessors of safranin. To investigate this possibility, two new series of experiments were started.

Series II was similar to the first. One of two unexposed plates was immersed in the developer and the other in water. After five minutes the latter was taken out and placed in contact with a protecting glass plate, which kept the developer from the emulsion, and then was laid beside the other plate in the developer, so that equally thick layers of this covered both of them. After one minute exposure both the plates were developed together. As in the former experiment, the plate treated with water was blackened through and through, but the one treated with developer was only slightly fogged. In order to more quantitatively estimate the amount of desensitization another plate was exposed behind an Eder-Hecht wedge at the same time and developed. The difference in blackening between the plates corresponded to at least 90 degrees on the wedge plate, which means a desensitization to about $1/4000$. Only an approximate value was found, it being very difficult to distinguish small differences in such great blackenings as those of the plate soaked in water.

Series III was run in the same way, with the exception that the developer-treated



CHEMISTRY
PAUL OUTERBRIDGE, JR.

plate was well washed in running water, after which it was laid beside the second in water and exposed there. Even in this case there was a difference in blackening of at least 70 degrees, i.e. the sensitiveness was brought down to about $1/630$ by means of the treatment in developer before exposure.

The experimental series II and III were carried out with Hauff Ultra-Rapid plates, and the results apparently show that there is a real desensitizing action and not merely a filtering one. The time of development in all these experiments was 10 minutes.

Finally I made some simple practical tests with Hauff Extra Rapid plates. Some of them were exposed behind an Eder-Hecht wedge and first developed in darkness and afterwards in light. In this case, when development had gone on for a minute I could light a 32 c. p. incandescent lamp (with frosted bulb) and continue the development by its light at a distance of about 30 cm from the lamp, and in spite thereof get negatives absolutely free from fog. When the development was carried on in sunlight or strong daylight, the plate was markedly fogged. The test with the 32-candle lamp showed, however, that the developer fulfilled all reasonable demands that can be made of a desensitizer. In this connection a parallel test with phenosafranin and metol-hydrochinon developer slightly fogged the plate, but what was worse, the red stain from the safranin was very difficult to get out of the gelatine, and could hardly be removed with sodium nitrate. The ferrous-oxalate developer, however, was very easily washed out.

Not only Higgins and his possible successors in America knew of the desensitizing qualities of ferrous oxalate developer, but people nearer our own time have used it, although without clearly observing its real value. In an article in *Svenska Fotografen*, 1912, John Hertzberg describes the development of autochrome plates in bright red light. The sensitive layer of the autochrome plate is panchromatic, i.e., sensitive to all colors, including red. Consequently, one cannot develop such a plate in the usual red darkroom light, but must do it in total darkness. This is, however, a disadvantage and F. Dillaye therefore proposed to bleach out the optical sensitizer with sodium bisulphite, after which procedure the now normal plate could be developed in red light. As Hertzberg showed, however, this method was not reliable, because of the restoration of the sensitizing power of the dyestuff in the usual alkaline developer, which naturally caused fogging of the plate. He therefore proposed to avoid it by using an acid developer, recommending ferrous oxalate. This was a happy thought. By using sulphite solution not only is the sensitiveness to the red end of the spectrum removed, but the total sensitiveness of the silver bromide is lowered. The ferrous oxalate developer consequently seems to be ideal for developing autochrome plates, as may be developed in a later communication.

To summarize: The ferrous oxalate developer is a powerful desensitizer, and consequently after a short immersion in darkness the development can be continued in white light. The ferrous oxalate developer seems to be particularly suited to autochrome plates. Developing in white light after desensitizing was known in America as early as the end of the eighties and was described by Dr. J. J. Higgins in 1889 and 1890.

NOTE:—Dr. Backstrom is probably right in ascribing to Higgins the first use of ferrous oxalate as a white-light developer, but the desensitizing properties of ferric oxalate, which is the active agent, were pointed out by Carey Lea in his original paper (*Brit. J. Phot.*, 1877, **24**, 292,304) and as a means for the destruction of this -ic salt Abney (*Phot. News*, 1880, **24**, 567) recommended the addition of very small quantities of hypo to the developer. Lüppo-Cramer (*Phot. Rund.*, 1922, **59**, 202) points out that the desensitizing by the ferrous oxalate developer that is not acidified, varies consider-



INDUSTRY
J. R. MASON

ably with its state of oxidation, and that with an old developer the desensitizing may be of the same order as with safranin. When a plate is developed in yellow light in a non-oxidized developer, and there are dense parts contiguous to clear portions, the latter fog, but there is a distinct line surrounding the dark parts, which is comparatively free from fog, due to the oxidation products diffusing laterally into the film. It is quite possible that Lüppo-Cramer's explanation is sound, but as precisely the same results can be observed when an alkaline developer, such as metol-hydrochinon or pyro is used, one is justified in assuming that the alkaline bromide formed during development plays no unimportant part in the formation of this line. Reference should be made to E. R. Bullock's article on convection effects (*This Journal*, 1922, 162).—Eds.

DESENSITIZING WITH PHENOSAFRANIN

H. G. CLEVELAND



T HAS been but a short time since phenosafranin solution has been recommended for desensitizing plates and films, and much has been said regarding this operation. Already other dyes have been discovered having similar properties and which may be superior to phenosafranin for the purpose. The one which seem to have the greatest promise for this purpose is pinakryptol green, but this is as yet unobtainable in this country, and the others have not proven as satisfactory generally as the phenosafranin.

The main objection to the phenosafranin bath has been its tendency to stain the plates or films severely, and this stain has been difficult of removal. Many attempts have been made to overcome this fault. These attempts seem to have taken the form of either finding other desensitizing solutions with less staining tendency, or discovering some bath which would readily remove the stain, rather than the addition of some other substance to the phenosafranin bath to remedy this condition.

In reference to the method of putting the plates or films through another solution to eliminate the stain, this adds one extra operation, which should be avoided, if possible, and also the chemicals suggested usually have a tendency to soften the film, which to say the least, is apt to be very annoying in hot weather.

The following method of preparing the phenosafranin bath eliminates practically all of the stain, what little stain is present being removed in the wash water or remaining in such small quantity as to make no difference in printing from the negatives. Anyone who has tried the phenosafranin bath as usually recommended or sold commercially will immediately discover the slight amount of stain obtained with the bath as here recommended, which is made as follows:

Stock Solution A

Phenosafranin (water soluble).....	20 grains
Water.....	8 ounces

Stock Solution B

Formalin 37%.....	¼ ounce
Sodium sulphate dry (Glauber's salt)	1 ounce
Water to make.....	9 ounces

To 9 ounces of B add 1 ounce of A.



A POSE
T. O'CONOR SLOANE

This working solution should be used as a separate bath, and the plates or films placed in it one or two minutes before starting development. They may then be given a short rinse, and development and fixing proceeded with as usual. As this bath also has a tendency to harden the plates or films, they should be removed in two or three minutes in order that they may not become too greatly hardened. On the other hand this property is of great advantage in the summer time, as the films are conveniently hardened while being desensitized, and therefore do not soften in the developer, in the hypo, or in the wash water. For this reason, no hardener is required in the fixing bath. The hardening in two or three minutes, due to the formalin, is not excessive, and films put through this bath over a year ago show no signs of deterioration.

When working as above indicated, the development is slowed up somewhat, but the correct time of development may be readily determined by one or two trials, and to make certain of the developer acting with uniform speed, the time that the plates or films remain in the desensitizer should be kept as uniform as possible. To avoid streaks which might occur, it is recommended that after the plate or film is removed from the desensitizer, it be well rinsed for a couple of seconds, placed in the developer, and the developer immediately rocked or the film kept in motion for about half a minute in order to be sure that the developer is acting uniformly. This same procedure should be followed when placing the negative in the fixing bath.

When using orthochromatic emulsions, the plate or film may be developed within two or three feet of a W. & W. OO safelight, which is the safelight used for bromide paper. Panchromatic emulsions such as W. & W. Panchromatic plates or Eastman Panchromatic film may be developed within the same distance of the same light provided a sheet of cardboard is interposed between the light and the plate, and the plate is kept in the shadow of the cardboard. While the plates and films may be developed in the light as indicated, some care should be exercised to avoid unnecessarily exposing them to the light. For this reason it is advisable to keep the tray covered part of the time. This is especially so in the case of the panchromatic emulsions, which are so extremely sensitive that a little extra care should be taken in handling them.

Another advantage of the desensitizing bath is the fact that it eliminates to a great extent chemical fog due to the developer and also fog due to an unsafe light or unsafe dark room, as the desensitizing starts as soon as the plate or film is placed in the phenosafranin bath. Because of this elimination of chemical fog and fog from an unsafe safelight, the negatives are much cleaner than is usually the case, and this is especially noticeable in the development of the panchromatic emulsions. For this reason alone, it is advantageous to use the desensitizing bath with the panchromatic emulsions, even with the regular green safelight which is recommended for use with them. In my own experience I may mention that in developing panchromatic plates and films by tray, using the green safelight provided for the purpose, I not infrequently obtained fogged negatives, which I attributed to various causes, old emulsions, leaving the films too long in the plate holders, etc., but not once did I doubt the safety of the dim green light. In contrast to this state of affairs, I may say that since using the desensitizing bath mentioned above I have obtained clean negatives free of fog, notwithstanding the fact that I have been developing the panchromatic emulsions with the tray close up to the dim green light provided for the purpose, and without covering the tray at all during the full time of development, lasting from three to seven or eight minutes.

Of course, the plates or films must be placed in the desensitizing bath in the dark or in a light safe for the plate in use, the brighter light being turned on after they have been



UNTER DEN LAUBEN
BETTI MAUTNER
Vienna Camera Club



STUDY

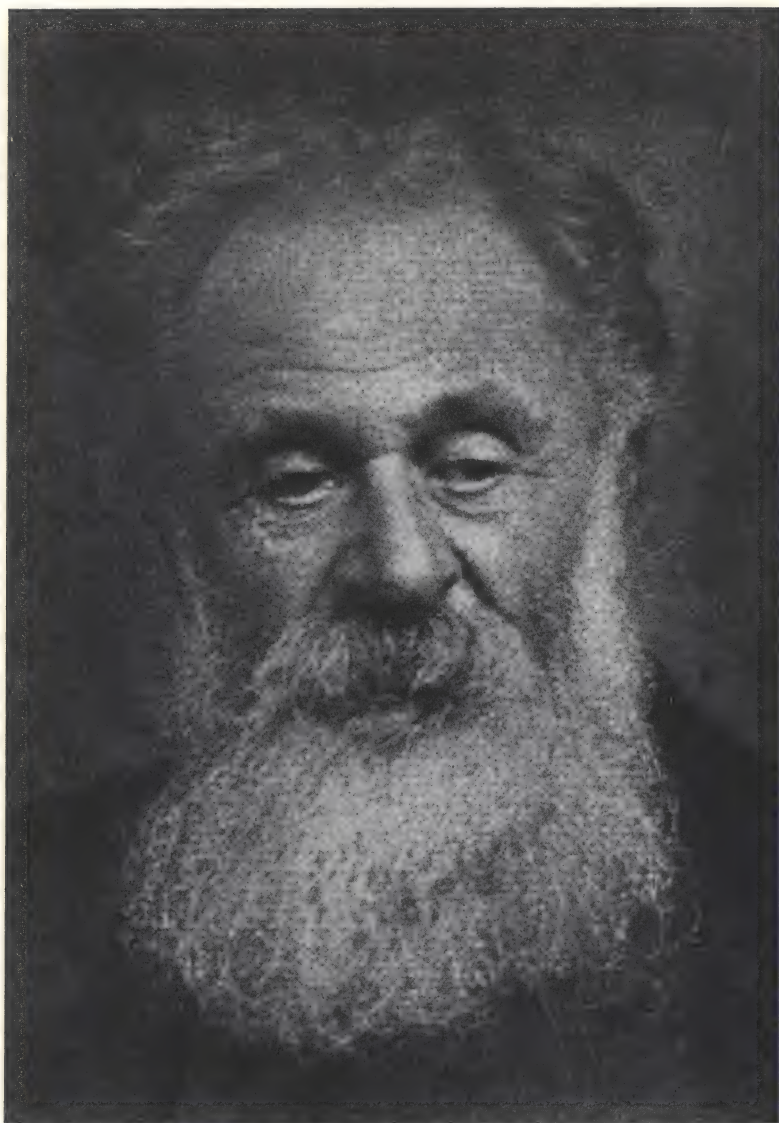
JOHANNES KRONE

Vienna Camera Club

in the solution for a minute or two. If the dark room is equipped with electric light, a convenient method of working is to attach the safelight and the brighter light to a double socket, starting desensitizing in the safelight and then turning on the brighter light. The objection may be raised that the plates or films must be started in the dark or by a weak light and that being the case, they might just as well be developed in such light, but this objection is not well founded, as but little light is necessary for placing the plates or films in the dye bath, and the light is considerably brighter during the development of the image. Therefore the eye strain is considerably less in the inspection of the image, and the image may be more carefully inspected.

In order to avoid staining the fingers in the operation, it is advisable to handle the plates or films in clips or hangers and keep the fingers out of the desensitizing solution. In practice this should present no difficulty.

Because of the hardening properties of the desensitizing bath, the emulsion becomes



PORTRAIT

ANNIE HATSCHEK

Vienna Camera Club

tough and strong, permitting rough handling, eliminating hot weather troubles as already mentioned, decreasing the possibility of damage to the film, permitting the use of warm developers and developers with caustic or other strong alkali, and allowing the possibility of rapid drying. As a preliminary bath to the use of Neol developer in warm weather, it is quite advantageous, and the temperature of the Neol developer may be as high as 75° without causing any trouble whatsoever.

Another objection to the regular phenosafranin bath as usually recommended, is the fact that its keeping quality after once being used, is not very good, as considerable mould often forms on it, necessitating filtering before further use, but with the formalin bath recommended above, the keeping quality is very good, and this may be used over

and over again and kept indefinitely, simply adding more solution from time to time to bring the quantity up to the amount desired.

The advantages of the above desensitizing bath may be summed up as follows:

Desensitizes plates or films, permitting development of panchromatic or orthochromatic emulsions in bright orange light.

Does not stain plates or films unnecessarily. No after treatment necessary.

Enables more accurate determination of time of appearance in factorial development.

Relieves eyes from severe strain of developing by weak light.

Enables better judgment as to whether negatives are over or underexposed, and amount of development necessary in each case.

Prevents fog from an unsafe light or unsafe dark room.

Contributes to prevention of chemical fog. Prevents hot weather troubles.

Enables use of warm or strongly alkaline solutions.

Toughens films, enabling rough handling with less possibility of damage.

Permits rapid drying of negatives. Keeping quality of solution is excellent.

A trial or two with the above method of procedure will readily demonstrate its merits and will probably result in its adoption.

JOHN WALLACE GILLIES

JOHN WALLACE GILLIES



SINCE these guys are getting so much publicity and I am the man with the ladle, I think I will grab off a little for myself. The Editor, Mr. Fraprie, told me I could do this, and since it gives me a grand opportunity to slam and roast all I please, without any come-back, it is one time where I can bang the old Remington without hurting a soul. Of course nothing hurts me; being in pictorial photography for so many years has thickened my epidermis to a point where nothing matters. My hide is so thick that it would turn back a 45 calibre Colt slug in disgust. That is a good thing in a way; I had spent many years in the open country, horses, guns, fish poles and things, and got it into my head that I was quite a hardy guy; then this pictorial stuff came along and I found that if I listened to any of the sharps on my pictures, I would have to chuck them all into the scrap basket.

You know this stuff. "This mass on the left, now I should lower the tone a little, and trim a little bit from the bottom. I believe that if you should make a new enlarged negative with better holding together of tones, and then make a gum platinum, you might get a result with more feeling. The decorative values are very good, but I should be inclined to accent the tree a little more." O gosh, there is six months work in that order, and that was only one of them. There is the reason why these pictorial workers only make about ten prints in a year; it takes that long to make ten prints in that manner. All the talk was about a bum print on some old paper I had, and I happened to have it in the book, thinking after a time I would throw it away as I do most of them. So you will readily see that if I could hope to live happily, I must necessarily disregard all my good friends and go ahead and bang away as I please. My only comfort was that when the print is made into a cut, you cannot tell whether it is a bromide or a platinum.



JOHN WALLACE GILLIES
JOHN WALLACE GILLIES

It took me a long time to tell why the epidermis has become so thickened, but I wished that the reader should be sure about this point, as it explains many others. This John Wallace Gillies fellow was loaned a camera to go off into the Adirondacks, and within three months had bought six others of varying kinds. His reason for starting in photography is quite the same as Reiter's, and eight million others. About the time he had progressed to a nice shiny new reflex, he got mixed up with Clarence White and Edward R. Dickson, and made the usual amateur's pilgrimage to Stieglitz. Up to this point he had been making nice fuzzy bromides, and after it, he was lost in a maze of gums, platins, kallitypes and such. The main lesson he learned from them was that the value of a picture was enhanced by proper printing of the negative. The cellar was a mess. The maid quit, and the washwoman told the "missus" that unless this nutty stuff stopped she would be bally well damned if she would do the washing. At this point the said John Wallace went into the business of photography, and precious little he knew about it from the professional's standpoint. Rotten irregular technique, and other things all wrong. No business knowledge. But good folks, he wears horseshoes, and the good Lord let him by. That was seven years ago, when he abandoned a respectable business, landscape architecture, to get his fingers all dirty in pyro baths. As it happened he knew the architects, and got jobs making pictures of their work; and they liked it, which was very good luck, and don't forget the good luck part of it. If a man is so situated that he appears successful, put it down to two things; firstly, that he has some twist inside of him that makes him do things which other people like, and secondly, that he is willing to work like hell. Both are true of anybody that makes good, but anybody who is willing to work that way is going to make good, if he has the little twist or not. Hard work is the real reason and he deserves no credit for the first.

All this hard work on his part took him away from his old love for seven years. Long time. The old love was left aside until the time should come when there would be time for it. Things are easier now. In the beginning there was only cold gall to start a business on; no knowledge; all had to be learned. It was. Then the old love, pictorial photography, came back and said: "Come and play with me again." She is a pretty girl and it could not be resisted. So John Wallace got into the P. P. A. with the old gang, and found many new faces. But in the pressure of doing many things which have to be done, it is difficult to make gums, and platins, and other nice prints. They are all bromides these days. They have to be. There is no time for the other. He has bought many a dozen of platinotype at four berries, and watched it grow old, unused. Business stayed good and there was no time to do nice things.

Getting a picture of this bird is some problem. The thatch is worn off the old dome, and the gentleman is a bit sensitive about it, and refuses to be photographed at all, unless we put a hat on him, or adopt some other way of camouflaging the fact that the fur is mostly gone. He does not mind discussing it himself, but dislikes pictorial references to it, or kindly comment from well meaning friends, who will persist in saying things like, "Grass never grows on a busy street." There is much ambiguity in such remarks, and the question arises as to whether the activity is internal or external.

There is a picture reproduced herewith, and after long and heated debate I have persuaded the sensitive person that I could make a picture of him which, while not actually camouflaging the round shiny point of discussion, would show it in all its entirety in such a manner as to not offend his sensibilities. Here it is; take a look.

He thinks he can make pictures. Maybe he is right, but I am not sure about it. He has some very definite and decided views about what is necessary in a picture made with



FRIVOLITY

M. L. SHATTUCK

First Prize, October Senior Competition

the camera. He has even written some stuff on the subject, which *Photo Miniature* was foolish enough to print. Pattern is a necessity according to him; and about the time he has me convinced that this is right, I see a lot of good pictures made without a vestige of pattern. The answer is still obscure. He thinks that anybody that calls photography an art is a nut; it is all right to bang around and make pictures with the camera, and very good fun, and all that, but when it comes to trying to get some critic to class them with paintings and etchings, he thinks that is all wrong, and cannot be. The photograph lacks the quality of the hand wrought article, and never will stand up as an art object alongside it; this conviction is firm, and the result of years of struggle, mental struggle, which to him is torture.

THE IRON SALTS, II

E. J. WALL, F. C. S., F. R. P. S.



THE GUM-IRON OR PELLET'S PROCESS. — This process was originally patented by H. Pellet (*Eng. Pat.* 4632, 1877) for the reproduction of drawings, designs on paper, wood, fabrics, metal, porcelain or other materials. A solution of perchloride or citrate of iron mixed with oxalic, citric or tartaric acid or an alkaline citrate together with a mucilaginous substance, is used to impregnate the surface. It is then placed in an alkaline bath to precipitate ferric hydroxide and rendered sensitive with a thickened solution of citric or tartaric acid. After exposure to light it is placed in a bath of potassium ferrocyanide, and the exposed parts remain white and the parts protected from light become blue. The surface is then well washed with dilute acid solution and water. This is the official description of the patent.

The chemical reactions are fairly simple. The sensitive salt is in the ferric condition and is reduced to the ferrous by the action of light. A ferrous salt only gives a white precipitate with potassium ferrocyanide, but the unexposed ferric immediately reacts and gives the familiar Berlin or Prussian blue. The result is obviously blue lines on a white ground, just the opposite to the cyanotype process. There is also some action on the gum, this becoming insoluble in the exposed parts.

The process is not a difficult one to carry out; but unfortunately the prepared paper will not keep, so that it has not been so generally used as the cyanotype process.

There are two good formulas; the first, due to Pizzighelli, requires three stock solutions:

A	Gum arabic	200 g	1536 gr.
	Water	1000 ccm	16 oz.
B	Ammonio-citrate of iron (red)	500 g	3840 gr.
	Water	1000 ccm	16 oz.
C	Ferric chloride	500 g	3840 gr.
	Water	1000 ccm	16 oz.

B and C will keep indefinitely in the dark; but A not longer than about 3 days, when it turns sour.

These solutions must be mixed in the above order, that is, the ferric citrate added to the gum and when thoroughly mixed, C stirred in. The ratios of the mixture are:

A solution	100 parts
B solution	40 parts
C solution	25 parts

At first the mixture is quite fluid and then, after standing some hours, it turns thick and cloudy, and finally becomes like soft butter, and in this condition it is ready for use.

Waterhouse's formula is rather simpler:

A	Gum arabic	170 g	6 oz.
	Water	650 ccm	23 oz.
B	Tartaric acid	40 g	617 gr.
	Water	150 ccm	5 oz., 134 min.
C	Ferric chloride sol., sp. gr. 1.453	113 ccm	4 oz.

This ferric chloride solution contains 47 per cent of ferric chloride and is approximately



ROBERT DELAND
EARL W. TETZLAFF
Second Prize, October Senior Competition

46° Bé. Here also the acid solution must be mixed with the gum, and then the ferric chloride added last. The mixture should be allowed to stand 24 hours, and then diluted till it has the specific gravity of 1.100.

It may possibly be useful to suggest the best way to make the gum solution. In the first place lump, and not powdered, gum must be used. A piece of fine cheese-cloth, or an old handkerchief, should be used. The required quantity of water should be measured out into a graduate or wide-mouthed bottle, and the gum placed in the cloth, which should be then lowered into the bottle or graduate, so that the gum is completely covered by the water. As the gum dissolves the solution sinks, in consequence of its greater specific gravity, and thus one obtains, without any trouble, a perfectly filtered solution. If the gum is just dumped into the graduate, it soon forms a thick glutinous mass at the bottom, and one has to keep stirring it; actually this method takes much longer than the previous one, and one has also the messy job of filtering. Should the gum in the cloth cake together it can be easily stirred up two or three times. Warm water may be used, and the bottle may be placed in a water bath, which facilitates the solvent action.

It is probably needless to add that in all these formulas distilled water is supposed to be used, as it should be for all photographic solutions, no matter what they are. It is, however, especially imperative with the gum and ferric salts, as in the first case an insoluble calcium salt may be formed and in the case of the ferric salts basic iron compounds may be precipitated, which will inevitably cause trouble.

The coating of the paper is effected in exactly the same way, by yellow light, as for cyanotype, that is with straight strokes across and back. As soon as the brush begins to drag, then the round brush should be used with circular strokes to even out the coating. The drying also should be effected by heat.

Exposure under a drawing on tracing cloth will take from 5 to 10 minutes in the sun, and the image, that is its lines, is distinctly visible in a clear yellow color on a darker ground.

Development, as already stated, is effected with potassium ferrocyanide, and a 20 per cent solution should be used. The exposed paper may be pinned to a board by the two upper corners and the solution swabbed on freely with a flat brush; but none of the solution should be allowed to obtain access to the back of the print. A simpler plan is to lay the print face down on the table and turn up all four sides for about half an inch and lap the corners with slip-on paper clips, and then carefully lower the surface of the paper on the developer.

This may seem at first sight a little difficult to do; but if the paper be held by the two hands and bent into the form of a J, the bottom of the loop can be lowered on to the surface of the liquid and the short end allowed to drop down and then by slowly lowering the hand holding the longer limb the paper is pushed along the surface of the liquid without the formation of a single air bubble. With a little practice it will be found that even a 20 x 30 inch print can be thus lowered in less than a minute.

The development is rapid, as the lines start out at once in a deep blue color. As soon as they have appeared, which will be in from 1 to 2 minutes, and this can easily be seen by lifting a corner of the paper, the print should be lifted up and lowered on to the surface of a dish of clean water, in just the same way as used for developing. The idea in this particular manner of working is that the back of the print must not be wetted till after the first wash, otherwise the ferrocyanide is carried through the paper and causes blue stains.

When the print is floating on the water a stream of clean water should be run through



WINTER IN THE WELD WOODS

ALEXANDER MURRAY

Third Prize, October Senior Competition

the dish, and this can be easily effected without wetting the back at all, if a length of rubber hose be fastened to the tap and its end placed well under the print. The water should not be turned on too full at first, but gently so as to enable the print to float up with the rise of the water.

As soon as the print has received its preliminary washings, which may be fairly short, not longer than 5 minutes in all, it can be lifted up and bodily immersed in a 10 per cent solution of sulphuric or hydrochloric acid. If this acid bath, as it may do, becomes colored, then a second acid bath should be used for about 5 minutes, and the print then well washed with water.

Fine deep blue lines should now show, if everything has gone right, on a white ground. If there is a slight tint in the ground, which sometimes happens, then the print should be laid face up on a glass or board and gently swabbed with a brush or, better still, absorbent cotton dipped in the acid bath. This at once clears off any tint. The print merely requires about 10 minutes washing and should then be hung up to dry.

Corrections can be made, as in the cyanotype process, with oxalate solution.



SURF

- Vienna Camera Club

ADOLF FRITZ

SEPIATYPE. — This process, which was patented by Arndt & Troost (*D. R. Pat.* 86,317, 1894), is somewhat akin to kallitype, a mixture of a light-sensitive iron salt with silver nitrate, in a solution of gelatine, being used. The primary light action is the reduction of the ferric to the ferrous salt and the secondary action the reduction of the silver nitrate by the latter during development to the metallic state. There is also, of course, some action on the silver nitrate during insolation, but this is of a subsidiary nature.

A suitable sensitive mixture is prepared from the following solutions:

A	Ammonio-citrate of iron, green	175 g	1344 gr.
	Water	1000 ccm	16 oz.
B	Gelatine.....	30 g	230 gr.
	Water	500 ccm	8 oz.
C	Silver nitrate	50 g	384 gr.
	Water	500 ccm	8 oz.

Soak the gelatine in the water for 15 minutes and then dissolve by heat at 45°C. (100°F.), filter and add A. Then add C with constant stirring. Keep the solution warm while sensitizing the paper.

The sensitizer is applied to the paper in exactly the same way as the other solutions, and it should be rapidly dried, though not at such a high temperature as the iron papers.

On exposure the image appears in a light brown color, and obviously gives white lines on a brown ground from a line drawing. The full depth of the print is not obtained by exposure, but only on immersion of the print in water. The exposed paper should be floated face down on water and the water changed two or three times and finally fixation effected in a 2 per cent solution of hypo, followed by thorough washing and drying.

Obviously, as the image consists of metallic silver, it is amenable to all the treatments of an ordinary silver print, that is to say, it may be toned with gold, platinum, uranium, copper or any other agent.



CHURCHYARD IN WINTER

Vienna Camera Club

KARL SUCHY

This process is frequently used with thin translucent paper to prepare proofs, which are subsequently used as negatives. The solution was for some time sold commercially in England for sensitizing postcards, writing paper, etc., without the gelatine, however, and it is an easy method of sensitizing paper.

THE INK PROCESS. — The basis of this process is again the light-sensitiveness of a ferric salt, its reduction to the ferrous state and treatment of the ferric image, that is those parts protected from light, with gallic acid, with the consequent formation of a true ink or gallate of iron. Ferric salts at once give a black image with gallic acid or tannin, while the ferrous combine but slowly with these.

The difficulty of the process is to obtain sufficient depth of color in the image and also to keep the whites pure, as there is great tendency for the gallic acid to form a gallate with the ferrous salts in the presence of atmospheric oxygen.

This process was originally suggested by Poitevin in 1859, and his sensitive mixture was compounded of ferric chloride and uranium nitrate. Actually, here, the uranium salt was the primary light-sensitive agent, as it was reduced to the uranous condition and in turn reduced the ferric to the ferrous chloride.

In 1883 Colas introduced this paper commercially and hence it is frequently called by his name. There are many formulas extant, but all are built on the following lines, the first being the more generally used:

Ferric chloride.....	66 g	506 gr.
Ferric sulphate	33 g	253 gr.
Tartaric acid	60 g	460 gr.
Water	666 ccm	10¾ oz.

Dissolve, and add just before use to:

Gelatine	33 g	253 gr.
Water	334 ccm	5¼ oz.

The gelatine must be dissolved by heat and the salt solution added while it is warm, and the mixture must be kept warm while in use, otherwise it will set to a jelly. It should also be noted that the ferric chloride is the ordinary lump and not the anhydrous salt; also that the sulphate is not the ferrous salt.

Another mixture that gives good results is:

Gum arabic	136 g	1044 gr.
Warm water	1000 ccm	16 oz.

Dissolve and add the following salts, making sure that each is thoroughly dissolved before adding the next:

Tartaric acid	18 g	138 gr.
Ferric sulphate	90 g	690 gr.
Ferric chloride	136 g	1044 gr.

Both these solutions must, as with the other iron sensitizers, be prepared and coated by artificial light, and the paper must be dried as rapidly as possible, by heat. The prepared paper will not keep more than about three weeks.

If a highly sized paper be used there is no need to use any colloid in the sensitizer, and the solution may be applied direct to the sized paper, when the following may be used:

Ferric chloride.....	100 g	768 gr.
Water	500 ccm	8 oz.

Dissolve and add:

Tartaric acid	30 g	230 gr.
Water	500 ccm	8 oz.

This must be applied very thinly to the paper.

The exposure under a drawing on tracing paper is about 10 minutes in the sun, and the lines should appear a distinct yellow on the white ground. The developer is:

Gallic acid.....	6 g	46 gr.
Oxalic acid	1 g	8 gr.
Water.....	1000 ccm	16 oz.

This is for the papers sensitized with the gum or gelatine mixtures, while for the sized paper a weaker developer should be used:

Gallic acid	3 g	23 gr.
Oxalic acid	0.1 g	0.8 gr.
Water	1000 ccm	16 oz.

The print can either be totally immersed in these solutions, which is the most convenient, or merely floated on the surface. In from 3 to 5 minutes the lines will appear in their fullest density. While total immersion is the easier, it is apt to give tinted whites, floating giving as a rule cleaner prints.



A MODERN FLAPPER

HOWARD F. LOUIS

Second Prize, October Junior Competition

As soon as the lines appear a full black, the print should be washed as rapidly as possible, and then the surface blotted off and rapidly dried, otherwise there is great tendency for the lines to run and become diffused. If the exposure is too short, the whites of the paper are tinted more or less. If on the other hand the insolation is too long, the lines are wanting in depth and the finer ones lost altogether. Successful prints can only be obtained by a thin coating of the sensitive mixture, correct exposure, and rapid washing and drying of the developed print.

Mention has been made of the necessity of using brushes not bound with metal, and it may be useful to some to point out how two excellent brushes may be made which have the advantage of always being clean and ready for use.

The first is the Blanchard brush, which was suggested by Valentine Blanchard in the early eighties. Blanchard was a well-known worker, who prepared his own printing papers, and thus found the necessity of devising a handy brush. This is nothing more than a strip of cloth tied to a sheet of glass. The glass may be any size, but naturally one will use an old negative glass, freed from its gelatine. It will be found convenient

to keep the size not larger than 4 x 5 inches at the outside. The edges should be ground off with a file or stone, so that they will not cut the fingers or the binding.

The best material to use is well-washed Canton flannel, sometimes called swans-down. A good-sized piece should be thoroughly washed with soap and hot water to free it from the dressing, well rinsed in hot water and dried. This can be kept in stock. The cloth should be cut about one quarter of an inch narrower than the glass, as this prevents the ravelling out of the threads. The length of the brush is merely a matter of taste, but as a rule half an inch is enough, and then the cloth should be cut about 4 inches in width. The cloth is folded in two and the glass placed between the folds, leaving half an inch of the doubled cloth free beyond the edge of the glass. The cloth and glass are then bound together as tightly as possible with stout string. If the edges of the glass are not ground off the string will soon be cut through; but this trouble can be gotten over by wrapping a strip of celluloid over the edges.

It is obvious that with such a brush the operation of coating even a large sheet of paper is comparatively easy, and very frequently one immersion of the brush in the sensitizer will be enough to coat a normal sheet, say 12 x 10 inches. The larger the sheet the larger may be the brush, that is to say, three quarters of an inch of free cloth may be used. In this case the cloth should be cut correspondingly wider, and a good rule is that there shall be from three to four times the length of the brush on the glass. For large sheets, 24 x 20 and so on, it has been found advantageous to use a piece of celluloid nearly the same size as the cloth, and to lay this inside the latter, and then fold without creasing sharply, and then tie on the glass. This gives a greater surface, as if the celluloid is thick, about 10-1000 of an inch, which can be obtained from any dealer, it forms a curve instead of a sharp fold and thus presents a greater surface to the paper. For such large brushes also it will be found better to use two glasses and clip the cloth and celluloid between them.

The advantage of this brush is that one can throw away the cloth, as soon as one has finished sensitizing, the glass can be scrubbed and a new brush made in a few minutes. For using this brush the sensitizer should be placed in a flat dish or household saucer, so that the whole length of the brush may be dipped in the liquid at once. But the cloth should not be dipped in as far as the glass, only till the latter nearly touches the solution.

The other brush is the Buckle. For this, one requires a piece of glass tubing, which may be of any internal bore and wall thickness; but as a rule half an inch bore will be quite large enough, particularly if the end be splayed out to a bell mouth. The length of the tubing is also immaterial; but 4 inches is ample.

A piece of string is doubled and passed through the tube and the end opened out to form a fair sized loop. In the latter is placed a tuft of absorbent cotton, so that the string is across the middle. Then if the string be pulled taut through the tube a very convenient brush is made, which can be thrown away as soon as done with.

The only disadvantage of the Buckle brush is that it is certain to leave individual fibers of the cotton on the surface, and the cheaper the cotton the more certain this is to occur. There are some absorbent cottons sold now, which are cheap and nasty, and utterly unsuitable for making this brush. They seem to be made from linters or the short fibers left adhering to the cotton seed after the longer staple fibers are removed. This stuff is hopeless, as it is impossible to make a brush that will last even for a small sheet, as it just falls apart into short fibers when in use.



PORTRAIT
MINYA DÜHRKOOP-DIEZ

SOME ADVANTAGES OF PROJECTION PRINTING

A. K. HANKS



FEW notes on the advantages of projection printing from photographic negatives, of what we may term difficult subjects, will doubtless prove interesting and helpful to many workers.

It is generally conceded that photographing interiors, especially when working directly toward windows which are illuminated by sunlight, is perhaps as difficult as, if not more difficult than any other accomplishment in photography.

The four illustrations shown will give an excellent idea of what can be accomplished.

Print "A" shows a straight print without any manipulation from the negative, which gives a key to the exposure for the thin portions of the negative itself. This print was given five seconds exposure and was fully developed.

Print "B" gives an approximate idea of the exposure needed for the more dense portions of the negative and was given an exposure of forty-five seconds without any manipulation. This print, however, was underdeveloped and was in the developing solution not over twenty to twenty-five seconds.

Print "C" represents a first attempt at a manipulated print. The lower portion of the subject as well as that portion including the ceiling was given an exposure of seven seconds. The central portion, which includes the top of the table and the entire section occupied by the fireplace, was given twenty-five seconds and the windows were given additional individual exposures, but not sufficient for as good a result as could be obtained.

Print "D" shows what may be termed a very excellent print from this negative. The entire foreground portion including all of the heavy furniture at the lower right-hand and entire left-hand part of the view was given six seconds. The dark part of the ceiling was given five seconds. The central portion was given thirty seconds. The window at the right-hand side of the picture was given an additional *individual* exposure of thirty seconds, whereas the area of the windows to the left of the center was given an *additional* individual exposure of forty-five seconds.

The original prints are all 8 x 10 in size and the original negative 4 x 5 inches.

In order to accomplish this work but three items are necessary for practically all purposes. The first is one large piece of cardboard or heavy black paper at least twice the dimensions of the print to be made (both in length and height), with a small hole in the center about one inch in diameter. When printing in an item such as a window or any portion of the negative which is dense this hole can be moved so that the light will penetrate through it and in turn expose that portion for any degree of manipulation desired.

The other two items are two large pieces of card or heavy black paper which have a corner about one-fourth of the total area cut out. By holding one of these in each hand they can be adjusted so as to give any sized shape of rectangle or square for printing in different areas.

Exposing a large area of the negative at one time can be done by holding the two pieces of card together (or by using one large solid piece), raising or lowering for a short fraction of time. To expose such an area as the ceiling portion of the print shown, the card is lowered for a few seconds, then quickly raised. To expose the entire area



AN ADVENTURE IN THE PARK

HAROLD C. ALLEY

First Prize, October Junior Competition

covered by the furniture the card is raised diagonally across the entire area of the print to accomplish the result as already described.

One will find that it is frequently a great advantage to expose the entire print by slowly lowering or raising, as the case may be, a solid sheet of black paper or card from top to bottom or from side to side in order to give a greater amount of exposure to the lower or other portion of the subject as may be required. This same manipulation can be varied to different degrees of speed so as to accomplish a wide range of results. The making of a good print from a photographic negative is not only most fascinating and interesting work, but calls for as much, if not even greater skill, than the actual making of the exposure and the development of the negative.

It has been my personal experience that a collection of 8 x 10 prints made on bromide paper from selected sections of small negatives gives the very best possible results to retain as a record, especially for compiling an album.

One of the greatest advantages aside from "manipulation" in making the print is the fact that one can use and select the *heart* of the composition of the original negative and use that portion only of the negative for the production of the print. It is very frequently



A

A. K. HANKS



B

A. K. HANKS



C

A. K. HANKS



D

A. K. HANKS

true that there is more or less uninteresting, or what might be termed, waste material to one side or to the top or the bottom of the original negative. It has been my experience that in over fifty per cent of the negatives which I make and consider worth printing, the original can be very materially improved from the standpoint of spacing and composition by making the print from a selected portion of the negative. It is fascinating to develop in one's own work the ability to select the "cream" of the picture, because of the fact that it so materially enhances the value and quality of the finished prints.

Again when making prints entirely by the "projection" method, the advantage of having large prints, usually 8 x 10, as a standard is so great that it needs no further comment. A collection of fifty to one hundred really excellent 8 x 10 prints is a greater joy to the owner and to show to one's friends than an album of several hundred contact prints, which of necessity will be of very miscellaneous quality.

It is especially true with negatives of portraits, made either indoors or outdoors, that the making of a contact proof on an ordinary printing-out paper is a very great help. In portrait work it is especially true that the negative may be of excellent technical quality but may be worthless because the expression of the subject is not satisfactory. Making a proof quickly shows this and also gives one the advantage of selecting the spacing and what to eliminate when making the large print by "projection" from those negatives which are worthy of printing.

PHOTOGRAPHIC ENTHUSIASM

ARTHUR W. MOREAU



THE pages of this magazine contain monthly articles written especially for amateurs, which classification includes myself. Do you use these articles? Or do you do as I used to, read the magazine through and then place it in a nice comfortable place on the library table or in the bookcase? If you do the latter you are simply following the line of least resistance and, incidentally, missing a whole raft of ideas and helps which will keep your photographic enthusiasm at 100 per cent all the time. Let me tell you about the things I have put to the test and found to be all they were claimed to be.

Through the advertising columns (I use them also) I have exchanged no less than five cameras, receiving in each case some camera, lens or shutter I wanted for the equipment I exchanged. I have also purchased from many firms advertising photographic goods. Not once have I been disappointed with any deal; in fact, on two occasions I realized more than I expected on old equipment. I presume the firms I dealt with realized a profit also, or they would not be doing business. But that is sound business policy; every one must benefit, or the deal is not a success. I have yet to meet disappointment in shopping by mail through photographic advertisements.

Repeatedly have I read articles favoring the tank method of developing. They were so numerous that I finally purchased a Thermo Developing Chart and a tank. I have given the tank method a very fair trial and the result is that I develop all my films in a tank. Lacking a tank for my 6½ x 9 cm plates, I develop these in a deep tray by the



PORTRAIT
JOHANNES KRONE
Vienna Camera Club

time and temperature method, using the same developer that I employ in the film tank. I find the average of good negatives of uniform quality is far beyond what I expected.

Combining definite developing methods with Exposure Tables accurately computed for each exposure and then studying the resulting prints, I have finally arrived at the point where I can produce a negative that will give a good print on gaslight paper, the average being nine negatives out of every ten. My only fault, at present, lies in improper focusing. To correct this I have a depth-of-focus scale worked out and am studying its possibilities. I expect soon to be able to use this scale without referring to it. Then my focusing troubles will be over.

Reading other articles has led me to lay out a schedule and adhere rigidly to it. I am methodical in all things I do, but I used to have no definite method in performing my photographic operations. Now I do everything according to rule and find that an evening all too short can be stretched to cover more work than was ever possible previously. I have also adopted one make of film, one brand of plates, and a paper I like very well. All this happened after a rather interesting tryout of every paper I could easily obtain. I use the developer recommended for each product. Incidentally, they are mostly prepared developers supplied by the makers of the plate, film or paper. When one has to confine his photographic activities to one evening a week, every obtainable convenience helps wonderfully.

Lately the small camera users have been booming their uses with well written articles. For nearly two years I toted around a 5 x 7 folding camera and it was some load, the camera alone weighing nearly 6 pounds. At the end of an afternoon hike it felt more like 60 pounds. Well, I finally traded it in and got a roll film camera of the $3\frac{1}{4} \times 4\frac{1}{4}$ size. That was too big, so I have at last arrived at a happy conclusion. I did not want too small a camera, so I have adopted a $6\frac{1}{2} \times 9$ cm camera of foreign manufacture which has every attachment of the big cameras excepting the swing back and the reversible back. I used to see tourists using these cameras in our beautiful park and frequently entered into conversation with men who carried them. After consulting catalogs of every make on the market, I chose one that to me is ideal in every way. It is small; takes plates and film packs; has speedy lens and shutter, rising and falling front, sliding front and double extension bellows, the lens being convertible. I have tried this camera in all kinds of light and under trying conditions and find it all that the maker claims it to be.

All the reproductions in the magazine are carefully studied and all the criticisms examined for helps and ideas. The camera club in a nearby city occasionally holds exhibits in an art gallery there and I am sure to attend these exhibits. Then if the magazine has reproduced any of the pictures of these exhibitors, I look them up and study them. In this way I have bettered my understanding of all things photographic. If any of you amateurs will do the same, you will finally be able to submit prints to the monthly contests. I have submitted a few, and will continue to do so until I have the satisfaction of producing a print that is worthy of a prize. It's not the prize I want, it's the satisfaction of work well done that I enjoy most.

Before I end this let me caution you to heed the words of the Sketch Book Editor. You probably read what he has to say each month. He is very interesting and he has a good command of the English language. But he hasn't said as much in as few words in any issue as he said in one of his articles a few months back. His words were: "Go slow." Who can say more?



MIRAGE
KARL SUCHY
Vienna Camera Club



WINTER

WILLIAM J. WILSON

WINTER

Some of the delicate gradations in this picture probably will be lost in the half-tone reproduction, but even so, it will still be a picture that will attract instant notice because of its simplicity and good composition. The dark mass of the roof is well placed in the picture space and forms a dominating point of interest. It is interesting to note that the tone of the sky is just a little darker than the snow. Careful observation will show that this is often the case on a dull winter's day, but unless proper precautions are taken to reproduce tones correctly, the sky is not always so rendered in a photograph. In this instance we note that a four-times filter was used and an ample exposure of one-fifth of a second was given at $f:16$. The camera used was a $2\frac{1}{4} \times 3\frac{1}{4}$ Icarette, Carl Zeiss Icar lens of $3\frac{1}{2}$ inches' focal length. The exposure was made in failing light at 4 P. M. in February. The enlargement which is very attractively mounted with an ink line drawn on the print close to the edge, is on P. M. C. No. 3.

MAKING M. Q. TUBES

I have been making my own developing tubes (M. Q.) and find it so satisfactory, interesting and profitable work, that I think others might like to try same. One gets fifty small vials (size regular M. Q. tubes) and corks for same and then proceeds in the following manner:

1. Weigh out 7.5 g metol and 25 g hydrochinon. Place in tin can with cover — and shake thoroughly.
2. Weigh out 145.5 g anhydrous sodium sulphite, 291 g anhydrous sodium carbonate and 1 g potassium bromide. Place in another tin can with cover and shake up thoroughly.

When this is finished weigh out 8.75 g of mixture No. 2 and place that amount in each vial. Then place a paraffined paper wad on top of this chemical mixture, and proceed to weigh out 0.65 g of mixture No. 1. Place this on top of the paper wad in each vial. Then cork and wax vials by dipping ends of corks and bottles in hot paraffin. Each tube is to be dissolved in eight (8) ozs. of water. — ELMER F. SHELBERG.

COPYING FADED PRINTS

In the ordinary routine of copying, the usual correct result to be aimed at is to obtain a reproduction as near as possible like the original copy, although in many cases many try to improve upon it. In the forthcoming remarks, it is proposed to show how it is possible to obtain a bright, crisp print from a very flat copy by the use of chemicals. It does not necessarily follow that the copyist must perform all the various processes mentioned below in obtaining the desired result (in fact, it would be a sheer waste of time, work and material to do so): but I wish to show the latitude there is in the after-treatment of weak copy negatives.

In the first place, the exposure has to be considered, which, when the copy is weak, is usually as short as possible, and the negative forced up in development so as to get it as bright as possible. But really in this case the plate should be overexposed to a certain degree, and then developed to infinity, the denser the better. After the plate has been fixed it should be put (without previous washing) into a very weak solution of potassium ferricyanide and hypo. As generally known, potassium ferricyanide, when used in a weak solution, always acts on the shadows first, and so, if the negative is fairly dense, it can be reduced (to a certain extent) without losing any detail.



CHRISTMAS CARD

ELMER E. HALL

After this, if the negative is not bright enough, it can be (after washing) intensified in the ordinary way. By this stage a fairly good print should be obtained.

Presuming the original is very weak indeed, the print can still be improved upon. For instance, if the negative is not too dense it can be put into the enlarger and printed (the same size, of course) on hard paper, if a powerful light can be obtained. This would make a great difference as compared with an ordinary print made by contact.

It matters not how flat or yellow the original may be, a hard reproduction can be obtained. For one thing, a positive can be made and then a new negative made, both these being intensified and treated as already described. One advantage of this method is, if the copy is for enlarging and the original negative is inclined to be a bit dense, a new thin negative suitable for enlarging can be obtained. — *British Journal of Photography*.

LENS FOR PORTRAITS

A lens of fourteen inches' focal length is not by any means too long for portraits to be made on 5 x 7 plates, especially if the pictures are to be of the head and shoulders only. For groups or standing full-length figures possibly a lens of shorter focus might be more convenient unless plenty of working space is available. An aplanatic lens is one that is free from spherical and chromatic aberrations. A rapid rectilinear or R. R. lens is one that is free from curvilinear distortion, and the manner in which the freedom from distortion is obtained is very simple. A R. R. lens is made up of two similar components and the diaphragm is in the middle, so that it is in front of the rear combination and behind the front one. The front combination used alone — a single lens with the stop behind it — would give "pincushion" distortion, and straight lines near the margins would be bowed in towards the middle of the picture. The rear combination — a single lens with the stop in front of it — would give the opposite kind of distortion, barrel-shaped distortion,

in which straight lines would appear to be bowed outwards, away from the center. In the R. R. lens both these distortions are eliminated because one kind of distortion neutralizes the other.

A SUGGESTION FOR A CHRISTMAS CARD

THE CHRISTMAS CARD shown here was made by setting up the group on a table on a dark day in a room with two windows. The shadow effect was obtained by using a 200 watt lamp and reflector, close up to group. The exposure at $f:32$ was, I believe, about one minute. This same idea for individual cards may be adapted for any occasion. Last year I used "Kewpie" dolls as models for Valentine cards, and this year intend to make Easter cards. I finished all the cards on double weight, dead matt paper and allowed a narrow white border to set off the card. — ELMER E. HALL.

BLUE TONES ON DEVELOPING PAPERS

With reference to suggestions for obtaining blue tones on developing-out papers, we have found that the following formulae give very good results. First bleach the print in:

Water.....	10 oz.
Potassium ferricyanide.....	100 gr.
Ammonia water (28 per cent).....	100 min.

After bleaching, wash well and tone in the following bath, rocking constantly:

Water.....	10 oz.
Ferrous sulphate.....	100 gr.
Hydrochloric acid c. p.....	50 min.

An alternative toning bath is as follows:

Water.....	10 oz.
Ferric chloride.....	220 gr.

After toning, wash free from stain, and it is desirable to immerse the print for a few minutes in a 10 per cent. hypo solution containing 50 grains of boracic acid to every ounce of solid hypo.



BUDDY

A. J. SCHUBERT

The above method has not much tendency to stain the highlights, although with all the iron toning processes there is always some slight tendency to veiled highlights. Usually the stain in the highlights can be removed in the washing, particularly if the water is used a little warm. We have had a good deal of success in obtaining a pure brilliant blue-print without the slightest veiling of the highlights by toning with gold.

The following formula is a good one:

Ammonium sulphocyanate.....20 gr.
Water.....1 oz.

to which add:

Gold chloride.....2 gr.
Water.....1 oz.

The print is immersed in this bath and toned until the desired blue is reached.

The drawbacks of the above process are the length of time occupied in securing the tone, and the comparatively high cost.

We think that if the iron method recommended earlier in this note is used, there will be no serious trouble with stained highlights. — *Anso Research Laboratory.*

BUDDY

In making a picture of a furry animal one of the most important considerations is to suggest the texture of the fur. This can be done only by getting suitable lighting conditions, by giving correct exposure and by developing so that the highlights are not too dense. When the fur is white these three conditions become even more essential, because a lack of care in any one of the three points

will be more noticeable than if the fur were dark in color. In making his picture of "Buddy," Mr. Schubert chose a difficult subject, but he has overcome the difficulties most successfully. The lighting, from top, is effective and brings out the modeling and textures, which the correct exposure and careful development have helped to preserve. The head is well placed in the picture space, too, and the picture is one of unusual interest. It was made in Los Angeles, California, outside, in yard, with an Eastman 5 x 7 view camera, Velostigmat Series II lens of 7 inches' focal length, used at $f/4.5$, exposure one-fiftieth second, bright sunlight at 2 P. M. in August. The Eastman Portrait film was developed in pyro and the print is on Azo, hard medium.

KEEPING THE BACKGROUND PLAIN

Whatever we select for the background, we must remember to arrange it in one of two ways. Either it must appear in the picture as a perfectly smooth tone, without any suggestions of detail or form, or else it must suggest or indicate its nature and form, in which case it must be the subject of careful attention. Many of the photographs which are made fail in this respect. It is evident from them that the photographer has hung up a sheet or some similar thing to serve as a plain background but that he has taken no further pains to get it plain. The consequence is that creases, or folds, or texture, or dirt marks, or one of the many things that ought not to show where all is to be plain, do show, and by the otherwise plain character of the background they are specially conspicuous.

Therefore, we lay stress on the need to stretch the



THE SAFE BLOWER

W. R. BRADFORD

paper on a card or board. It should be paper without any very pronounced grain. It should be sufficiently far behind the actual subject of the picture to be out of focus; although this should not be detected, as it should have no detail or other irregularity of surface to show whether it was in focus or not. It is sometimes possible to hide any irregularities by moving about the background during the exposure; but there is always a risk in so doing of moving the subject also.

The tone of the background need not be alike all over. It may be graduated so as to be lighter on one side than the other; and a very beautiful and even graduation may be obtained very simply by using a large enough background and bending it into a curve, so that one part catches the light more than another.

A somewhat similar set of considerations applies to the surface on which the subject is to be placed. Sometimes a long strip of card or paper can be used to support the subject and to come up behind it also and serve as the background; but it is generally more satisfactory to indicate both a horizontal and a vertical surface. In that case we get a horizontal line across the picture, where the background meets the "floor;" and it is well to have this far enough behind the object to be fuzzy. At the same time it should be straight, and there should not be any signs of an imperfect junction, such as we see

when the roller of a rollable background is allowed to lie on the floor—a fault frequently noticeable in amateur portraiture.

On a small scale, we can deal very well with such a case by arranging the object on a sheet of card on the table, with a fair extent of card behind the object, ending in a straight, clean edge. The background is supported separately a few inches behind this edge, and carried below it, so that the bottom of the background is not seen from the lens at all. It is difficult to explain why, but this method seems to give more relief or solidity to the object than most other methods; whatever it is we are photographing does not appear to have a background pushed close up against it. — *Photography.*

THE SAFE BLOWER

These "toyland" studies of Mr. Bradford's are not only very interesting and amusing, but they are also remarkably clever and wonderfully ingenious. He apparently possesses an unlimited supply of original ideas. He draws on this supply very freely and combines with it the skill of the practiced draughtsman and the knowledge of the experienced photographer. His data on "The Safe Blower" show that knowledge and skill were used in its production. The figure of the safe blower was modeled in putty



OUR HEIR

RAYMOND R. CARVER

and stained gray. The door of the toy safe was removed and propped up as though blown off by the explosion. A tungsten wire fuse was made, placed in the safe, and wires run from the fuse to the battery circuit, connected to the curtain slide shutter. An overhead 50-watt Mazda bulb was lighted and an exposure of one minute given, curtain shutter closed, flash-light apparatus connected, and a flash given with two grains of flash powder. The negative was then developed with one quarter the usual amount of carbonate and the solution diluted with twice the usual quantity of water. The camera used was a Cycle Graphic, 4 x 5, fitted with a Beck Rectilinear lens of 11 inches' focal length, stop $f:11$. The Eastman Commercial Ortho film was developed with metol-hydrochinon and the enlargement is on Artura Carbon Black.

OUR HEIR

It must have been a rather trying experience taking a picture of a baby indoors and having to give as long an exposure as three seconds. We imagine Mr. Carver will agree with us that a professional photographer who takes many pictures of babies saves

himself a lot of worry and anxiety by using a rapid lens and cutting the exposure down to a fraction of a second. Mr. Carver's lens was stopped down to $f:16$, but by using it at its full opening, $f:7.7$ (practically $f:8$), he could have reduced the exposure to three quarters of a second with exactly the same result. A professional photographer would probably use a more rapid lens still, $f:4.5$ or $f:3.8$, and thus have a margin of safety to allow for poor lighting conditions. Of course the wide open lens gives less depth of focus and the focusing must be done carefully, but at $f:7.7$ the anastigmat lens on a 3A camera has sufficient depth for a single figure like this. Technically the picture is a good one. We would prefer to have less violent contrast between the child and the background, for such harsh contrast is not in keeping with the subject. The photographer surely was lucky to get this picture with so long an exposure and with no trace of any movement. Taken indoors, bright light at 3 P. M. in February, Eastman Speed film developed with Eastman M. Q. and printed on Azo No. 2 Carbon.

STAINS IN URANIUM TONING

Stains in uranium toning may be caused by the toning solution not being sufficiently acid. They may be caused by impurities in the paper, by insufficient fixing of the enlargement originally, or by dirty dishes or fingers.

Simple washing in running water will remove the stains, but it will remove the tone of the print also, bringing it back to its original color. It may then be retoned and if proper care is taken, no stains should make their appearance.

A COLLECTION OF FACTS

Here are formulated a collection of facts in the form of if's and don'ts, from which the following statements have been compiled to apply to all developers, in a general way.

Before you knock, investigate the cause of your complaint — look at our list of questions. If you are beyond those questions, the fault is certainly not with you.

The usual troubles are: impure or grayish whites, greenish or brownish tones, contrasty, or weak prints (lacking detail), flat or "muddy" prints, or too dark prints, yellowish or brownish stains, round dark spots, blisters, discoloration around edge of prints, curling or cracking of the surface, round white spots, surface marks (on glossy paper), etc.

The following questions will point out a remedy for the usual photographic troubles.

1. Are you a careful operator, or do you carry developer in your hands over to the fixing bath, and *vice versa*?
2. Is there anything wrong with the negative?
3. Are you exposing right, or are you over- or underexposing?
4. Is your laboratory too warm, or damp, or exposed to chemical fumes, or sewer gas?
5. Is your balance accurate?
6. Are the weights accurate?
7. Any mistakes in the weighings?
8. Is your water pure and clean?
9. Are your chemicals pure?
10. Did you mix your chemicals in the proper order?



OUT OF REACH

ELIZABETH B. WOTKYNs

11. Was the solution clear before you added the next chemical?

12. Is your developer too old?

13. Are you "forcing" your developer?

14. How long are you developing?

15. Are you "spreading" your developer properly?

16. Is the amount of potassium bromide right?

17. How about the temperature?

18. Is the temperature of all the baths about the same (65° F. to 70° F.)?

19. What paper are you using?

20. Is it suited for your purpose?

21. Is it "too dry," or has it been spoiled by light, fumes, or otherwise?

22. Are you printing too close to light?

23. Did you allow prints to cool before developing?

24. Did you move prints about, while in the different baths?

25. Did you look out for air "bells" and "bubbles?"

26. Did you crease or break any prints while washing?

27. Did you let the water run from the tap directly on the print?

28. Did you have sufficient hardener?

29. Was fixing bath acid? Was it milky?

30. Do you wash thoroughly?

After this, blame your materials. — *Northern Photo News*,

OUT OF REACH

This is a very clever and original picture—a good idea well carried out. The tones, though perhaps a little dark, are correct and about as they would appear in contrast with the white dress. A very dainty and perhaps a more pleasing effect might be



AN IMPOSING EDIFICE

FORD E. SAMUEL

secured by keeping the entire picture in light tones, light floor covering and light background. It might be worth trying again with the change suggested. As usual the technical treatment is fully adequate and shows care and skill. A slightly darker tone in the mount would be an improvement, we think, in this particular case. Made with a $3\frac{3}{4} \times 4\frac{1}{4}$ Pressman Reflex camera, fitted with an Aldis anastigmat lens of $5\frac{3}{4}$ inches' focal length, used at $f:4.5$, bright light at 3.30 P.M., exposure one-fifteenth second, double coated Standard Orthonon plate.

AN IMPOSING EDIFICE

The title is well chosen. The building is an imposing one and is very beautiful. We think the maker of the picture will agree with us that a more interesting lighting might have been selected. Instead of having the front of the building all in shadow and a strong light on the side where there is nothing of very great pictorial importance, it might have been better to wait till the light was just a little farther around towards the front, so that it would throw a little more light on the pillars and the very interesting doorway. The proper selection of lighting conditions is one of the most important features of architectural photography. The reproduction of it on the film is easy and simple compared with the task of selecting the best conditions. The writer, many years ago, spent an entire day studying the west front of Salisbury Cathedral in order to find out at what time the lighting was most effective, but the actual photographing, when that was ascertained, was a matter of only a very few moments. A slightly

more distant point of view, or a lens of slightly shorter focal length, would be better in this case. As it is, the building looks a little crowded. Made in Alameda, California, with a $6\frac{1}{2} \times 8\frac{1}{2}$ Seneca View camera, Velostigmat Series II lens of $9\frac{1}{2}$ inches' focal length, used at $f:11$, six-times screen, bright light at 9.30 A. M. in March, exposure one-fifth second, Commercial Ortho. Film developed [with pyro-soda. print on Azo E No. 2..

ENLARGING BY STRIPPING

It is possible to enlarge a negative a little, from 4×5 to about 5×7 , just by removing the film from the glass, allowing it to expand naturally, and then letting it dry in contact with a larger piece of glass. This is particularly suitable for negatives that are a little too dense and strong as the stretching tends to reduce the density a little.

The negative should be soaked for ten minutes in:
 Potassium fluoride.....15 gr. 30 g
 Distilled water1 oz. 1000 ccm
 Then, without draining, immerse in:
 Citric acid1 oz. 50 g.
 Water20 oz. 1000 ccm

The film will almost immediately begin to lift at the corners. The negative should then be transferred to a dish of clean water and the film gently rolled up with the fingers from one end. A clean and preferably gelatinized glass should be slid on the top of the first one and the film unrolled and glass and film lifted out and the water gently allowed to run off. This negative should then be allowed to dry.



THE BROOK IN WINTER

JOHN N. CONSDORF

THE BROOK IN WINTER

The tones in this picture are very fine and there is a strong suggestion of sunlight that is very interesting. The composition, however, in one respect is unsatisfactory, the three dark tree trunks are poorly placed in the picture-space and they "pull" very strongly towards the corner and out of the picture. If this print were to be cut in half, exactly in the middle, it would make two good pictures, both of which, as regards composition, would be more pleasing than the whole print. Graflex camera $3\frac{1}{4} \times 4\frac{1}{4}$, Verito lens of 7 inches' focal length, used at $f:4$, three-times filter, exposure one-fifteenth second, good light, at 10 A. M. in November, Standard Orthonon plate developed with pyrosoda, enlargement on P. M. C. No. 6.

GET YOUR PRINTS OFF

Good work won't always make a good business. It is important to give your customers what they want — but it is just as important to give it to them as they want it and when they want it.

It may very well be laid down as an axiom for the professional photographer that when proofs are delivered quickly the chances of getting a big order are increased, and that when the order is delivered promptly the chances of getting a re-order are also increased.

When photographers used nothing but daylight printing processes, the weather was often blamed for delays in getting out orders. But customers will not listen to the weather excuse now. They know that most of the work is printed by artificial light; and that, when there is a delay in the delivery of their orders, the fault lies with the photographer and not with the weather.

A professional, whose aim is to make progress, cannot hold on to the old methods of printing; he *cannot* afford to get behind with his orders; and he *cannot* afford to lose customers. The man who takes advantage of modern inventions for rapid artificial-light printing gets his work out quickly, pleases his customers, and increases his business. More than that, he is in a position to take on special work which the man without these facilities would not be able to touch.

Take, for example, two photographers in a small town. One uses a modern printing machine and the other uses an old-fashioned printing frame. Some event of local interest takes place in the town. Both photographers make negatives. The man with the printing machine gets at least two hundred prints out within a few hours, and makes his sales; the other man is not able to get out more than a few dozen copies, which remain unsold.

The photographer who wants to get his work finished and delivered in good time, must fit up his workroom with one of the modern printing machines. — *Photo Digest*.



THE PHOTOGRAPHIC REVIEW

E. J. WALL, F. C. S., F. R. P. S.

TIN TONING. — J. G. F. Druce deals with this subject and states that pleasing tones are obtained, but that there is some difficulty in obtaining uniform results, and that ordinary sulphide toning is much simpler. The prints were bleached in a normal solution of:

Ammonium bromide	10 g	80 gr.
Potassium ferricyanide	30 g	240 gr.
Water	1000 ccm	16 oz.

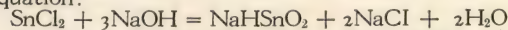
Other bleaching solutions, such as cupric and mercuric chlorides, do not give such good results, unless great care be taken. To obtain a warm brown tone the bleached prints were immersed in:

Stannous chloride	50 g	348 gr.
Water	500 ccm	8 oz.

To this was added enough of the following solution to form a clear solution:

Sodium hydroxide	50 g	384 gr.
Water	500 ccm	8 oz.

Then the bulk was made up to 1000 ccm or 16 oz. After standing, the clear solution was decanted and contained approximately 2.5 per cent of sodium hydroxy stannite, formed according to the following equation:



Druce has shown (*Chem. News*, 1922, **124**, 215) that even when excess of alkali is used normal sodium stannite is not formed. It is advisable to dilute this solution still further, so that the working solution contains 0.5 per cent of stannite, although hydrolysis begins to appear in the shape of a precipitate. Assuming that the image is silver ferrocyanide the reaction that occurs is:

$\text{Ag}_2\text{FeC}_6\text{N}_6 + 2\text{NaHSnO}_2 + 6\text{NaOH} = 4\text{Ag} + \text{Na}_4\text{FeC}_6\text{N}_6 + 2\text{Na}_2\text{SnO}_3$. Or, the silver ferrocyanide is reduced to metallic silver with the formation of sodium ferrocyanide, and sodium stannate. Apparently it is not advisable to wash the prints too long, as this removes the stannate and any metastannic acid, so that it is preferable to merely rinse the prints well and dry. Instead of using stannous chloride the more stable potassium and ammonium stannochlorides gave equally good results (*Brit. J. Phot.*, 1922, **69**, 433).

CORRECT FOCAL LENGTH. — A. Lockett deals with Debenham's method of finding the correct focal length of a lens. This rule is to use an ordinary foot-rule and focus to a definite scale or ratio. Measure the distance between the foot-rule and the image and multiply by the ratio, and divide by the ratio plus 1 squared or,

$$F = D \times \frac{R}{(R+1)^2}$$

For example, suppose the image of the foot-rule is exactly 3 inches long, or a ratio, R, of 4, and the distance from the rule to the ground glass is found to be $53\frac{1}{2}$ ins., then $53\frac{1}{2} \times 4 = 212\frac{1}{2}$ and this

divided by 4+1 squared, or 25 = $8\frac{1}{2}$ ins. focus. With careful focusing this gives absolutely correct results; provided the nodal points of the lenses coincide, but as they rarely do, the error is the nodal

separation, NS, multiplied by $\frac{R}{(R+1)^2}$ Lockett

suggests the following method which does away with the necessity of finding the nodes. Proceed as in the Debenham method, and instead of proceeding to calculate, focus the rule sharply to another larger ratio, say 5, and again measure the distance. The true focus can then be found by the following formula in which D' and D'' are the two distances and R' and R'' the two ratios.

$$\frac{D'' - D'}{(R'' + 1 + R'') - (R' + 1 + R')}$$

Suppose that in testing a lens the ratio is 4 and the distance 62.7 ins.; and for the larger ratio we have the number 5 and the distance is 72.2, then:

$$\frac{72.2 - 62.7}{5 \frac{1}{5} - 4 \frac{1}{4}} = 95/10 \div 19/20 = 10 \text{ ins.}$$

This method is only necessary when the true focus is required, as when working to an accurate scale (*Brit. J. Phot.*, 1922, **69**, 434).

SILVERING GLASS — Mr. E. S. King, of Harvard observatory sends a reprint of a paper descriptive of the method of using the formaldehyde process of silvering glass, which was worked out by his son when sixteen years old. It was found that the original formula contained too much formaldehyde, and that if the temperature of the mirror was about 5 to 10 degrees C (10° - 20° F.) higher than the solution better results were obtained. The actual directions for silvering are as follows:

First a saturated solution of stannous chloride is made up, and diluted for use with an equal volume of water. Several wads of clean absorbent cotton are laid out on a clean sheet of paper. The surface of the mirror is carefully rubbed with one of the wads dipped in nitric acid. This removes the old coat of silver, with all the dirt which may be adhering. After thoroughly washing off the nitric acid, a fresh wad of cotton wet with the stannous chloride solution is rubbed over every part of the surface of the mirror. Water is then poured over the mirror, and the surface is rubbed, first with the same wad, and then with a fresh one. Great care should be taken to remove all traces of the stannous chloride, as, if any is left on, it makes the coat granular. One should be careful not to touch the surface with the fingers, as any trace of grease is fatal. The mirror, if a small one, may then be placed in a tray just a little larger than itself, and covered with water at temperature from 18° - 21° C (65° to 70° F.). If a large mirror, a band of waxed paper, tied tightly around the edge, makes a dam and serves the same purpose.

Two solutions are required as follows:

A	
Water	100 ccm
Silver nitrate	4.3 g
Add strong ammonia just sufficient to redissolve the precipitate first formed.	

B	
Water	20 ccm
Formaldehyde (Merck)	4 ccm
The temperature of these solutions should be about 7° to 10° C. (45° to 50° F.)	

The wash water is then poured off the mirror, the solutions quickly mixed and poured over the mirror. Silver will begin to be formed on the surface of the glass almost at once, the solution turning to a red brown color. In about half a minute, the solution begins to turn muddy, with a granular black precipitate. The mirror should be left in it until this precipitate begins to stick to its surface. This usually requires from three to five minutes. The mirror is then washed with wet cotton and flowing water, and set on edge to dry. It is important to get as thick a coat as possible, for such a coat stands burnishing better and lasts longer. The thickness can be roughly estimated by observing the amount of light transmitted by it. An electric light filament can barely be seen through a thick coat. The burnishing is done with a pad of chamois skin, into which some very fine rouge is worked. The best rouge is that washed out from the cloths used after the final polishing in the making of a large lens. The rouge is only sufficient to color the pad. The surface of the pad must be kept perfectly free from dust, or the delicate surface of the silver will be scratched (*Pop. Astronomy*, Feb. 1922.)

While the subject of silvering glass may appeal to but few amateurs, every user of a reflex camera may be interested at some time. The use of stannous chloride is ascribed to Lundine, and though this may be known by his name it was, I believe, first suggested in J. E. Pratt's *Eng. Patent* 1,250, 1876. The formaldehyde process was suggested first by A. & L. Lumière (*J. de Phys.*, 1895, 29; *Jahrbuch*, 1895, 245). Their formula was 100 ccm of 10 per cent solution of silver nitrate solution, with just enough ammonia to dissolve the precipitate first formed, taking care to avoid excess of ammonia; this was then diluted to 1000 ccm. A 10 per cent solution of formaldehyde was also made by diluting the commercial 40 per cent solution. For use 2 volumes of silver solution were mixed with 1 of formaldehyde, and the temperature recommended was 15° to 10° C (59° to 66° F). If one calculates the volume of Mr. King's solutions as 150 the ratio of silver to formaldehyde will be found to be 4.3:1.6 or 10.372, whereas Lumière's was 1:5. Professor R. W. Wood in "Physical Optics," 1922, 281, in his description of silvering interferometer mirrors recommends a 1 per cent solution of silver nitrate and 4 per cent of formaldehyde, and he states that this gives a pinkish film, which forms an excellent substratum for the thicker deposit, which is obtained by pouring off the above solution and applying a mixture of 3 of silver to 1 of formaldehyde, which gives the blue deposit. The ratio in this last solution is 1:1.3.

In a discussion on "The making of reflecting surfaces," at a joint meeting of the Physical and Optical Societies of London, 1920, N. H. Irving recommended a 0.2 per cent solution of silver nitrate, ammoniacal, with twice its volume of a solution of 8 to 10 drops of formaldehyde in 4 oz. of water, which was to be kept two days before use. He recommended the glass surface to be mopped with the silver solution first for at least a minute, before the application of the silvering mixture. Dr. J. W. French, *loc. cit.*, stated that the formaldehyde process had the sole merit of being very simple and rapid and therefore suitable for experimental work, but in the present stage of its development it was rarely used in optical manufacturing. Compared with the Brashear and Rochelle salts surfaces, the formaline surface was dark. The process has the

additional disadvantage that one deposit can not be laid upon another, and can not be electrically plated with copper. There is some difference of manipulation possibly, as Wood distinctly states "if it is desired to produce a thick opaque deposit the silvering process should be repeated several times," and I have used Wood's method four times on the same glass in order to obtain a strippable film. S. J. Pace, speaking of the silvering of vacuum flasks for liquid air, said that he used the formaldehyde process and found that the best method of cleansing the glass from grease was with sulphuric acid, then washing carefully twice with double-distilled water. Very much better results were obtained by heating the glass nearly to redness before silvering, and then soaking well in the silvering solution before applying the reducing solution. The solution when ready for use should show a faint opalescence. Better results were obtained by using strong solutions and agitating the vessel until the silvering was complete. The dodge of heating the glass is excellent and passing a flame of a Bunsen burner or spirit lamp over it has always acted well.

Probably the most exhaustive research on this process was carried out by A. Silverman & R. M. Howe (*J. Ind. Eng. Chem.*, 1917, 9, 1032) and they developed two processes, a rapid and a slow cold process. The rapid cold process is as follows: 20 ccm of 0.2 molar solution of silver nitrate solution are mixed with 0.5 ccm of 80 per cent methyl alcohol, and 0.5 ccm of 40 per cent formaldehyde. The slow cold process was 16.5 ccm of 0.037 molar silver solution, 1 ccm of 1.000 molar cane sugar solution, 0.5 ccm 80 per cent methyl alcohol and 2 ccm 0.8 per cent solution of formaldehyde. These authors state that the cost is not over one cent per square foot of surface silvered. As regards the action of stannous chloride this, Dr. French stated, was not wholly removed by washing, but there was an extremely thin surface film left, which can only be removed with difficulty with nitric, but readily with hydrochloric acid. F. Fafet (*J. S. C. I.*, 1898, 154) suggested that a silicate of tin was formed on the surface of the glass, but as the tin treatment seems to be equally efficacious with celluloid, there can be no possibility of a silicate formation here. J. Graham (*Brit. J. Phot.*, 1919, 66, 155) recommended a 1 per cent solution of silver nitrate and a formaldehyde solution compounded of 40 per cent solution 45 ccm, water 450 ccm and methyl violet 1 g. For 20 sq. ins. of glass he recommended 90 ccm of the silver solution to which ammonia should be added drop by drop (a fountain pen filler comes in handy here), shaking after each addition. He stated that a slight excess of ammonia was not detrimental. In another vessel should be poured out 11 ccm of the formaldehyde solution. The surface of the glass should be well rubbed with a swab soaked in a 0.5 per cent solution of stannous chloride, then rinsed under the tap and wiped with a swab wetted with distilled water. Then the formaldehyde should be added to the silver solution and immediately poured over the glass. The solution at first turns muddy, but after 1 or 2 minutes clears up and then water should be run in from the tap, the mirror lifted out and drained and any adherent drops of water removed with blotting paper. After half an hour the mirror should be ready for polishing. The best temperature is between 21° and 26° C (70° to 80° F), though it is a good plan to have the glass a few degrees warmer than the solutions, and this can be effected by immersing it in tepid water. While it

prolongs the silvering process considerably I have found that using the solutions at as low a temperature as possible, gives much more adherent films and I have thus chilled them to 30° C (37° F) and placed the dish in which the silvering is effected in cracked ice. This has always given me an extremely hard, adherent coating that can be repeated several times and polishes to a perfectly black mirror. I think that the effect of temperature of the solutions has not been taken sufficiently into account as a rule and with both the Brashear and Rochelle salts process cold solutions have given the best results. It is interesting to note that Mount Wilson and Greenwich, England, use the Brashear method and that this is actually a modification of one suggested by H. J. Burton in the *Brit. J. Almanac*. 1873, 89 and 1876, 58.

Messrs Lumière's latest instructions for the use of their process (*Agenda Lumière*, 1922, 325) are as follows: level the glass to be silvered carefully and cover with a 25 per cent solution of 90° alcohol, and leave for several minutes, during which time the actual silvering solution should be prepared. This is made as follows:

Formaldehyde, 40%	24 drops	24 drops
Alcohol, 90%	24 ccm	414 minims
Distilled water	24 ccm	414 minims
Silver solution	48 ccm	828 minims

This is sufficient for 1000 ccm (155 sq. in.) and the temperature should be from 16° to 20° C (60° to 68° F.) The silver solution is prepared as follows:

Silver nitrate	10 g	77 gr.
Distilled water	100 ccm	2 ozs.

Add solution of ammonia drop by drop till the brown precipitate first formed is redissolved; but extreme care must be taken not to add too much ammonia. Then add:

Silver nitrate	2 g	15.4 gr.
Distilled water	100 ccm	2 oz.

Then add sufficient distilled water to make the total bulk 1000 ccm or 16 oz., allow to stand for five minutes; then filter several times till quite clear. The glass should be drained from the alcohol bath and then covered with the silvering solution. The deposition begins in about 90 seconds and will be complete in about 2 minutes. During the silvering the dish should be gently rocked to prevent striae. As soon as the liquid begins to become cloudy or show spicules of silver, it should be poured off and a second quantity of the solution applied. Several coats may be thus applied till the desired thickness is obtained. At the close of the operation the surface has a slight reddish-brown appearance. It should be washed with successive lots of distilled water, and dried, standing it on white blotting paper. When the film is perfectly dry it can be polished with very soft chamois enclosing a pad of absorbent cotton, and rouge, the rouge as used for gold being the best.

The alcohol is used to prevent the formation of a precipitate in the solution and if this forms too much formaldehyde has been used. If too little formaldehyde be used, the film has a pronounced reddish-brown color and is punctuated with numerous pinholes. Thus it is necessary to make some preliminary experiments to determine the exact quantity that should be used. In all cases the formaldehyde must only be added just before applying the mixture to the glass. If too high a temperature be used, the deposit forms too rapidly and becomes powdery. With small mirrors the glass may be placed in a glass or porcelain dish, and the alcohol

bath may be omitted. If instead of using the silvered surface as the mirror, the glass side is used, then the silver coat should be coated with:

Gum dammar	10 g	77 gr.
Bitumen of Judea (asphalt)	100 g	770 gr.
Red ochre	200 g	3 1/5 oz.
Benzol	1000 ccm	16 oz.

The ammoniacal solutions of silver are dangerous to keep in stock, as they may form explosive fulminating silver.

COLOR PHOTOGRAPHY. — L. Mauguier patents a method of taking and projecting motion pictures in colors by splitting the exposure into four colors, instead of three; two of the fundamental colors are used, but the third is split into two. Two lenses, either vertically or horizontally juxtaposed, are used with an annular sector shutter, and the pictures are half the normal size (*U. S. Patent* 1,421,279, 1922). The idea of using four colors is old and has been used by Kelley & Raleigh, Mishon-sky and others, and presents no particular virtues that warrant its adoption. Besides that the additive projection process is not commercial.

K. Waga proposes to take three negatives for cinematographic work, one without a filter, and the other two with red and green filters; all exposures being made simultaneously, though he does not state how he proposes to do this. From the ordinary, that is the filterless negative, he would make an ordinary black and white positive and dye it with yellow. From the green-filter and red-filter negatives, positives are made and these printed on bichromated gelatine coated on aluminum or other metal perforated bands. The images thus obtained are inked up with a greasy ink, which only takes on the exposed parts. These greasy prints are then soaked in the complementary colored dye solutions and pressed into contact with the yellow stained positive, the dye migrating from the matrices to the print (*U. S. Patent* 1,420,673, 1922). The use of metal supports for print-plates and greasy inks and bichromate methods has been anticipated by Thornton's patents.

P. von Ditmar proposes to use the property which some dyes exhibit of becoming crystalline under the action of light. He would use a mixture of fuchsin and thymol, coated on opaque glass or paper, expose under a positive to the sun, then develop in barium or calcium chloride, bathe in potassium carbonate solution, then in chloride of lime or expose to the vapor of chlorine, which is said to produce the colors. It is also stated that the best results are obtained with dyes that completely bleach-out with long exposure (*D. R. Patent* 350,005, 1921; *Phot. Ind.*, 1922, 550). Ditmar has gone back to his old love, which he suggested in 1897 (*D. Phot. Ztg.*, 1897, 340) and which Neuhauss (*Phot. Rundh.*, 1898, 291) stated only gave iridescent colors, though by prolonged exposure of such a plate to sunlight a colored result was subsequently obtained under a colored transparency. Apparently Ditmar has now found some improvements, but it will take more than this to revive the bleach-out process.

LIGHT DARTS. — C. E. K. Mees points out that while the continuous wave theory of light was adopted in order to explain the phenomena of interference and diffraction and has been useful, especially in the electromagnetic form given to it by Clerk Maxwell, recently phenomena have been observed for which it seems to be inadequate, and a theory of

radiation in discrete units seems to be necessary. According to the quantum theory, energy is radiated by an electron in the form of waves such that their corresponding frequency is proportional to the energy. When X-radiation is absorbed, the energy communicated to the electrons corresponds to the frequency of the rays and therefore to the energy of the electron which generated the rays. It is clearly very difficult to account for this on the wave theory, while a quantum theory of radiation is more suitable. Recent work on the exposure of silver bromide grains to light has shown that the grains behave as if they differed in "sensitiveness," so that grains, even of the same size, do not become exposed at the same time, and Dr. Silberstein has suggested that the simplest explanation of this is that the grains which become developable are those which are hit by at least one quantum. A calculation of the chance that a grain of any size would be hit gives a relation between the size of the grains and the number of those being hit that become developable after a given exposure. On trial this relation was found to hold remarkably well, but the bigger grains, as compared with the smaller ones, became developable a little more quickly than they should have done according to the calculation. This can be explained by assuming that the projectiles of light are not infinitely slender, but have an appreciable diameter of an average size comparable with that of a very small grain. Dr. Silberstein suggests that the projectiles be called "light darts" rather than corpuscles, since there are good reasons to believe that they consist of long trains of waves, but of very small diameter, traveling, of course, with the velocity of light. The experimental work on the theory is being continued, and further evidence as to the nature of the structure of radiation obtained from the exposure of photographic emulsions will be published as it becomes available (*Sci. Amer.*, 1922, 336; *Abst. Bull.*, 1922, 8, 241).

WET PLATE PROCESS. — R. Grenell recommended for development of wet plates a 12 per cent solution of ferrous sulphate, instead of the usual 3 to 4 per cent, and stated that this gives good density with great clearness in halftone work in about 12 seconds (*Bull. Soc. Franc. Phot.*, 1921, 68, 295). This was tested out by the Lehr und Versuchsanstalt, of Vienna, and the results confirmed; but K. Broum points out that with large plates, with such short development, it is very difficult to prevent irregularities and spots (*Phot. Korr.*, 1922, 59, 105).

NEW RED SENSITIZERS. — The Kodak Research Laboratory announces the preparation of some new sensitizers for the deep red. The first, naphthacyanole, is a nitrate derived from beta-naphthquinaldine, which shows a strong red maximum at wave length 690 with a very marked gap in the green, even more so than pinacyanol, which it can replace when deep red sensitiveness is required. Another dye is acetaminocyanole derived from the corresponding quinaldine compound, which sensitizes in the red at 730 with a pronounced minimum in the green. Apparently this dye is unsuitable for bathing plates, as it hydrolyses and gives a totally different result, but it acts well when added to the emulsion before coating. A third dye called kryptocyanine gives very great red sensitiveness between 700 and 800 with a total want of sensitiveness below 680 in the orange. It would seem that it is most likely to be useful for astronomical work, as

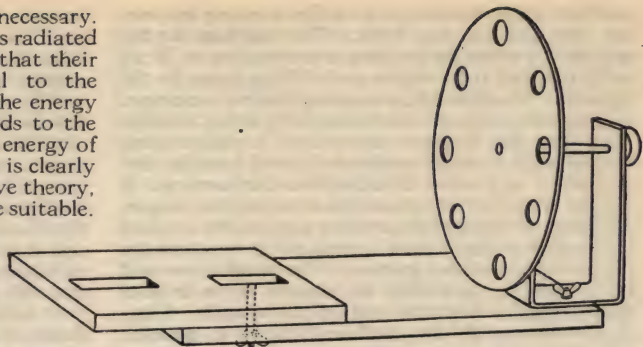


Fig. 1

when used in very weak baths, 1:500,000, it gives such sensitiveness that with a strong yellow filter exposures of one second can be made with a lens at $f:8$ and the results obtained are characteristic of those obtained with infra-red; the sky appears dark and green foliage very bright, so that a tree covered with spring leaves appears as if in blossom and the grass like snow. The first and last named dyes are to be added to the list of the organic chemicals sold by the Laboratory (*Brit. J. Phot.*, 1922, 69, 474).

THE SPEEDS OF FOCAL PLANE SHUTTERS. — F. H. A. Hall describes a method of ascertaining the speeds of a focal-plane shutter, which is comparatively simple. For this purpose a before-the-lens shutter is used, which gives a series of exposures during the travel of the blind. A disk of thin card about 6 inches in diameter is mounted on a spindle passing through two bearings and carrying a grooved pulley on the outer end. This disk has 8 equally spaced holes punched in it, seven-eighths of an inch in diameter, allowing sufficient margin from the edge to act as a light trap; thus from the outside edge of the hole to the edge of the disk is three-quarters of an inch. A piece of card with a five-eighths inch hole in the center is fitted in front of the lens to allow the

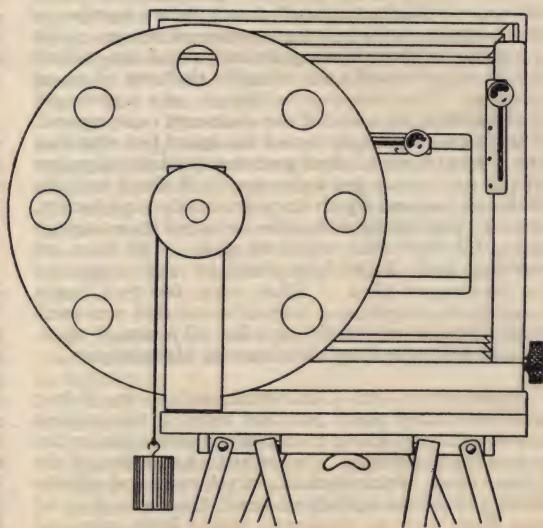


Fig. 2

smallest space consistent with free running between the disk and the lens front. The bearings for the spindle are made by bending a strip of brass, $\frac{1}{2} \times \frac{1}{2}$ inch, twice at right angles and drilling holes for the spindle. The base of the bearing bracket is clamped to a wooden support 1 inch square by about 6 inches long, and this is again clamped to a similar piece long enough to reach under the tripod head so that one screw will serve to attach to the camera. A weight of about three pounds is attached to a length, four feet, of strong thread with a loop on the opposite end, which is placed over a small pin driven into the bottom of the pulley groove. The weight is wound up to the top and held in position by a loop of thread placed over the end of the spindle. Fig. 1 shows the device detached and Fig. 2 in position for use.

The blind shutter is set with a narrow slit and wound up, the dark slide put in and the shutter slide withdrawn, the camera being pointed to a bright sky. The loop of thread, which holds the weight from falling, is cut through and the focal-plane blind released just as the weight strikes the ground, at which moment the disk will be revolving at its greatest speed. On development the negative will be found to be crossed by a number of dark bands, which are images of the slit; the actual number varying with the speed of the focal-plane blind. There is no need to press the release as the time taken for the weight to attain its maximum speed is quite sufficient to allow of reasonable deliberation. With shutters having a fixed tension and variable speeds by alteration of slit width, one negative will give all the data required; but with shutters with alteration of tension of spring a fresh negative must be made for each tension. The diameter of the pulley on the fixture is 1 inch, and its circumference 3.141. The maximum speed of the weight is 96 inches per second. As 96 divided by 3.141 = 31 approximately, the disk makes 31 revolutions per second. There being 8 holes in the disk, each exposure represents 1-248 second. The number of dark bands shown on the plate divided by 248 gives the fraction of a second for the blind to complete its travel and this divided by the number of slit widths contained in the height of the plate denotes the effective speed of the shutter. Example: Width of slit was 1-10 inch, height of plate 3 inches, number of slit widths in 3 inches, 30, number of images of slit 15, speed of front testing shutter 1-248 sec. Then $1-248 \div 15 = 1-16.5$ sec, which is the time of travel of blind. This is multiplied by 30; $16.5 \times 30 = 485$ and the effective speed of the shutter is 1-485 second. This method not only shows the speed but also that the normal form of blind gives bands closer together at the top, which get wider apart till about half the distance, beyond which they are nearly equidistant, showing that the blind has then reached its maximum speed (*Brit. J. Phot.* 1922, 69, 324). The front revolving disk with falling weight was suggested by Birkhauser (*Brit. J. Phot.*, 1909, 66, 535), but a much more complicated form of sector disk was used, which however could be used for all forms of shutters and for measuring the duration of flashlights.

SENSITIZERS AND DESENSITIZERS. — E. König and R. Schuloff point out that most of the present day sensitizers belong to either the phthalein or the quinoline-cyanin dyes. The important members of the former class, which includes erythrosin and all the eosin group, are acid dyes, while the basic dyes of this class, such as rhodamin, are of little practical

value. The isocyanins, on the other hand, are all basic dyes. With the acid eosin group, the introduction of a halide into the molecule enormously increases the sensitizing properties, this being, as is well known, most marked with erythrosin, which is a tetra-iodo compound. With the basic isocyanins, the introduction of a halide lowers the sensitizing power. It has been assumed in the past that the dye, to be a sensitizer, must itself be very sensitive to light, must have sharp absorption bands, or fluoresce strongly. But all these are negligible, and it is not possible to conclude, from its chemical constitution or its physical properties, whether a dye will sensitize or not.

A very similar state of affairs prevails as to the desensitizers. Although this matter has been closely studied, there does not seem to be any certainty from a chemical point of view as to the actual cause of desensitizing. Lüppo-Cramer considers it to be due to the oxidation of the dye; but this is untenable from the purely chemical point of view. Later researches have proved that it is possible to prepare both sensitizers and desensitizers from the same class of dyes, and they differ only in the fact that certain substituents are introduced into the common atomic grouping. Although the authors admit that, obviously from commercial considerations, they are unable to publish the constitution of the new desensitizers, they have determined what radicles act as sensitizers and what as desensitizers. Their researches have, as already announced, resulted in the discovery of pinakryptol and pinakryptol green (*Phot. Korr.*, 1922, 59, 43).

Closely allied to this subject also is a note by F. Kropf, who after recalling the work of Capstaff and Bullock, and Renwick, as to the color-sensitizing by colorless salts, points out that extremely minute traces of metals in water may produce marked changes in fast emulsions. Distilled water was allowed to stand for from 2 to 20 hours in contact with various metals, and then plates were bathed in the water. Such plates showed more or less color-sensitiveness, as compared with a control plate treated with distilled water. Lead, tin, zinc and iron showed a marked effect. On the other hand, a plate bathed in water which had stood in contact with mercury showed a marked decrease in general sensitiveness but no color-sensitizing. No color-sensitizing action was observed with silver and copper, but the plates were cleaner and stood longer development (*Phot. Korr.*, 1922, 59, 47).

A NEW DEVELOPER. — B. Homolka has discovered that hydrocoerulignon, which chemically is tetramethoxy-p-p'-dioxidyphenyl in an alkaline solution, is a developer and gives a colored image. The formula recommended is:

Sodium sulphite, dry	....50 g	384 gr.
Potassium carbonate	....50 g	384 gr.
Hydrocoerulignon	.....10 g	77 gr.
Water	.....1000 ccm	16 oz.

The image appears in about 30 seconds and development is complete in from 4 to 5 minutes. After fixing, the image is seen to be clean, vigorous and of a brown color, and actually consists of an image of black metallic silver and an orange image of coerulignon. If treated with an alkaline solution of sodium hydrosulphite the dye image is dissolved, leaving the black silver image. Farmer's reducer dissolves the silver image, and leaves the dye image. Potassium cyanide cannot be used to dissolve the silver as it also dissolves the dye. (*Phot. Korr.*, 1922, 59,

29). Homolka has always paid special attention to this subject of color-giving developers, and announced the use of indoxyl, which gives blue images, and thio-indoxyl, which gives red images in conjunction with the black silver deposit (*Phot. Korr.*, 1907, 44, 55). Later he suggested the use of the ethyl or methyl compound of naphtho-hydrochinon, which also gives a blue dye image (*Phot. Korr.*, 1914, 51, 256, 471) and he proposed the use of oxy-isocarboxystyryl, which gives a yellow image (*Jahrbuch*, 1914, 28, 22). R. Fischer patented (*Ger. Patent* 257,167, 1911; *U. S. Pat.* 1,055,155; 1913) the use of indoxyl and other compounds and obtained further patents (*U. S. Pat.* 1,079,756, 1913; 1,102,028, 1914) for the same class of developers. But very little practical use seems to have been made of these discoveries.

SEPIA PLATINUM PAPER. — R. Jacoby, who has for many years paid special attention to the platinum printing process, gives some useful hints on the preparation of a sepia paper. It is well known that this does not keep so well as the black paper, and now Jacoby states that a long series of experiments have proved that this is primarily due to the raw paper base. Animal-sized paper is preferable to resin-sized, and the best thing to do is to give the paper a good sizing of gelatine and then coat with arrowroot. A thick hard paper should be chosen; Whatman's is especially suitable. A 1½ per cent solution of gelatine should be used and 1 per cent of chrome alum, calculated on the weight of the dry gelatine, should be added to the warm solution. This means a solution of:

Gelatine	15 g	115 gr.
Chrome alum	0.15 g	1.15 gr.
Water	1000 ccm	16 oz.

The paper should be immersed in the warm solution and then hung up to dry, and again immersed and hung up from the other end. A 1 per cent solution of arrowroot should be used once or twice in the same way. Or the following may be used:

Arrowroot	10 g	77 gr.
Water	900 ccm	14¼ oz.

Dissolve in the usual way by boiling and when cold add:

Egg albumen	100 ccm	770 min.
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The albumen must be whipped to a froth and left for 24 hours and then filtered. The sensitizing solution is:

Normal ferric oxalate solution	625 ccm	10 oz.
Water	375 ccm	6 oz.
Mercuric chloride .....	.45 g	346 gr.
Potassium chloride .....	.60 g	460 gr.
Potassium chlorate .....	.5 g	38 gr.

The normal ferric oxalate solution is that suggested by von Hübl, which contains 20 per cent of ferric oxalate with a slight excess of oxalic acid. For a sheet 50 x 65 cm (20 x 25 in.) mix as follows:

Above solution	8 ccm	135 min.
Potassium chloroplatinite sol.	4 ccm	68 min.

If the paper has a rough surface, add water 4 ccm (68 min.) The chloroplatinite is a 1:7 solution. This should be applied with a brush, which must not be bound with metal (*Phot. Korr.*, 1922, 59, 31).

BLEACH-OUT PROCESS. — R. Kögel has tried out a new dye of the phenanthrazoxonium group for this process. The dye must be used with alcohol as the solvent and with the addition of hydrochloride acid, when a fine blue color is formed, which rapidly bleaches out on exposure to light (*Phot. Korr.*, 1922, 59, 40). Dr. Kögel considers this a proof of the theory of the bleach-out process, but it will require more

than this to revive this very much deceased process.

BROMOIL TRANSFERS WITHOUT A MACHINE. — Dr. E. Mayer, who has made a specialty of this subject, suggests that it is possible to obtain bromoil transfers without the use of a machine in the following way. Place the bromoil print face down on the transfer paper and obtain contact by stroking. Then place a straight edge parallel with the long side of the bromoil print and with a medium hard lead pencil, with not too sharp a point, rule lines on the back of the print, so close together that no white spaces show in between. If any white lines show they must be gone over again. The pressure to be used must be learnt, but neither should the pencil point itself break nor should the print be damaged. The use of any other pointed instrument is not advisable, unless it gives dark lines, as it is then difficult to see whether any parts have been missed. The use of a bone or ivory paper knife, as a rule distributes the pressure in broad lines and does not act well. It is possible in this way to obtain transfers even on rough papers, although it naturally takes some time. The progress of the work can be examined from time to time by lifting the straight edge and the print. By crossing the lines, the effect of a coarse cross-lined screen is obtainable. Clean and brilliant prints can thus be made and while the process will not replace the machine, it is useful when one has not the latter and especially for small sizes (*Phot. Korr.*, 1922, 59, 59).

COPPER TONING. — P. Strauss recommends the following bath for obtaining very pleasant brownish-red tones on development papers, and the bath is said to keep well:

Cupric sulphate	3.7 g	28½ gr.
Ammonium oxalate	15 g	115 gr.
Potassium ferricyanide	7.5 g	58 gr.
Chromic acid	1 g	7.7 gr.
Water	1000 ccm	16 oz.

The chromic acid helps to keep the whites clean (*Phot. Rund.*, 1922, 59, 147).

SENSITIZING NEGATIVE PAPERS. — R. Namias states that slow negative paper for reproduction may be sensitized well with the iso- and carbocyanins. Excellent results were obtained with a bath of 1:5,000,000. The negatives were very dense and clean, especially if before development the paper was treated with phenosafranin, preferably 1:10,000, so as to avoid any deep staining of the paper fibers. The slight stain left after this bath gives no trouble in practice (*Il Prog. Foto.*, 1922, 29, 108; *Sci. Tech. Ind. Phot.*, 1922, 2, 65).

INKS FOR BROMOIL. — R. Namias recommends the following medium for making inks for this process: dissolve by heat in a metal vessel 500 g (8 oz.) of gum dammar in 1000 ccm (16 oz.) boiled linseed oil, using a naked fire. The pigments should be mixed with this as required; lampblack, sienna, Prussian blue, chrome yellow, alizarine lake, etc. (*Il Prog. Foto.*, 1922, 29, 98; *Sci. Tech. Ind. Phot.*, 1922, 2, 67).

A CORRECTION.—On p. 528 of the August issue the formulas for the amidol developers should read as follows:—

Sodium sulphite, dry	31.25 g	238 grs
Amidol	63 g	48 grs
Potassium bromide	3 g	10 grs
Glycollic acid	3 ccm	10 minims
Water	1000 ccm	16 ozs

In the second formula the quantity of amidol should read 69 grs.



PRACTICAL HINTS

GETTING MAILING LISTS FROM THE NEWSPAPERS

FRANK H. WILLIAMS

There are two things that make direct mail advertising especially effective. One of these is a good mailing list containing only the names of such people as are real prospects for the advertiser, and the other is timeliness in the subject matter of the advertisements sent out. When these two things are found together, the results achieved by direct mail advertising are frequently of an exceedingly gratifying nature.

Photographers who are anxious to do everything possible in promotion of business should not overlook direct mail advertising. They will pay special attention to this form of advertising when they realize how easy it is for them to secure mailing lists of women who are live prospects and how easy it is to draft letters that are especially timely to send to these prospects.

The way to do this is to watch the newspapers closely. While it would undoubtedly be possible to secure mailing lists of men's names in the same way, this article is confined to the circularization of women because it is felt that women, as a rule, are more interested in having photographs taken of themselves and of their families than are men.

Every daily paper issued in your city, Mr. Photographer, contains several names that can be used by you for direct mail advertising purposes and every issue of the paper also provides a theme upon which to frame superlatively good sales letters.

Let us examine a daily paper and see just what is provided for us along this line. First of all, as we are seeking to interest women, we will turn to the society columns of the paper, just as many of the women readers of the paper will do. Somewhere on this page we shall see a little paragraph stating that "Mr. and Mrs. John Doe announce the engagement of their daughter, Miss Mary Doe, to Mr. Richard So-and-So." That announcement is not only interesting, but it furnishes a splendid opportunity for us to do some promotion work. Right away, we dictate a letter, somewhat as follows, to the bride-to-be: Miss Mary Doe, City.

Dear Miss Doe: We read the announcement of your engagement in this evening's paper with much interest and we want to offer our best wishes to you for a long and happy married life.

Of course, at this joyous time of your life, when you will be the center of interest for friends and acquaintances, you will want to have some photographs taken in your bridal costume, going-away suit, etc., and in this connection we want to extend to you a cordial invitation to visit our studio and inspect some photographs we have taken for other brides. We are sure you will be interested in seeing these pictures, whether you decide to buy photographs from us or not.

To increase interest among young ladies in our work, we are offering a special reduction of ten per cent on quantity purchases of photographs by brides. We will tell you more about this when you call.

Wishing you all the joy in the world and hoping to have the pleasure of seeing you very shortly, we are,
Very truly yours,

The Smith Photo Gallery.

Of course, if you do not care to give a ten per cent reduction on photographs purchased by brides, you can easily leave out that paragraph.

Would not such a letter probably result in Miss Doe making a trip to the studio to look over the collection of bridal pictures and is it not likely that the studio would make a sale that it would not otherwise have made, as the result of sending out such a letter?

Look through the daily papers in your city for engagement announcements. They are constantly being made and the photographer is provided every time with a ready-made subject for a timely sales letter and the name of a very real prospect.

In addition to this, the feminine relatives of young ladies who are so socially prominent that the newspapers consider it good news to publish announcements of their engagements will also probably want to have pictures taken in the new clothes they have for the wedding, and if the bride-to-be determines to patronize some particular studio, it is quite probable that her relatives and many of her friends will follow her example.

So it is evident that a letter such as we have described may be the means of bringing in a lot of new business.

The engagement announcements are not the only ones that are of interest to the photographer. In the society columns of the newspapers are constantly being mentioned the names of ladies who are attending functions of some sort or another. Such people are real prospects for a photographer, for they generally have money and they generally like to have pictures taken quite frequently. So the photographer would, undoubtedly find it profitable to send letters to ladies who are chronicled as attending parties and to call attention in these letters to the class of work done and to the kind of people who patronize the studio. To receive such a letter would flatter the recipient a lot, particularly if the photographer included in the letter some such phrase as: "We see your name mentioned frequently in the local society columns." If the recipients of the letters felt flattered at receiving them they would, quite naturally, show how they felt by patronizing the photographer.

The news columns of the papers frequently contain material that an alert photographer can use to splendid advantage. In them are found items telling of women's doings in various activities. They tell about women meeting with the city council to take up matters of civic interest; of women forming political clubs; of women being admitted to the practice of law, etc. Women realize fully the value of publicity in securing social prominence or in increasing the success of any enterprise in which they may be interested, so women who are mentioned in the papers in connection with these things are good prospects for the photographer. Live-wire photographers are overlooking no opportunities these days for getting business, so live-wire photographers will not overlook the opportunities presented to them by daily newspapers for doing some advertising by mail



BROOK IN WINTER

ENOS HAWLEY

that will bring results. Cash in to the utmost on the opportunities presented by *your* local daily newspapers.

* * *

AN OFT-FORGOTTEN PLEASURE

GEORGE S. HAWLEY

One of the greatest pleasures in outdoor photography is, I think, often overlooked by the average amateur.

The camerist goes out in an expectant and joyous mood, finds a beautiful scene, and takes a photograph of it. The plate is developed, a print made, and, in many cases, great disappointment is felt. The print may be fairly good, but the result is so entirely different from the *real picture* the camerist saw that it is wholly unsatisfactory.

I have had many such experiences; have thrown away scores of plates and put aside as many more, solely for this reason, wondering what the trouble was and why my pictures (to me) were such failures.

One day I discovered the secret. I was beginning to understand, thanks to our fine photographic magazines, most of which I take and read, that *real* picture making does not consist in a blind and mechanical reliance on the lens and the straight print, but that it may be made "the expression of one soul talking to another." I learned, too, that I was not using the

proper medium for the purpose in mind.

Then I began — again inspired by articles in the magazines — to experiment with carbon, oil, oil-transfer, bromoil and gum; each beautiful and each necessary at times to the exclusion of all the others. The most elastic, however, and the one that appeals to me as being usually the best for putting into the picture "that which nature does not possess, namely, the *mind and soul of a man*," is the gum print.

This making a picture part of oneself is the "oft-forgotten pleasure," and it is not difficult either. I made some very good gums before I ever saw a gum by following Mr. Zimmerman's luminous article in "The Photo Miniature." Then, of course, I read other articles and books on the subject. With patience and common sense these beautiful processes to which I have referred may be made the willing servants of the amateur who has a message to give and wants to give it in an appealing way.

Two or three years ago, rather late in the afternoon of a beautiful day, I found what I thought was a picture. I took it, developed the plate and made a print. The plate was a poor one and so was the print. I tried everything from Azo to ZZ Platinum, but without success; the real picture was not there, there was no soul in it.

I put the plate away. After a year or two, when I took up gum, I tried it again, and then I was able

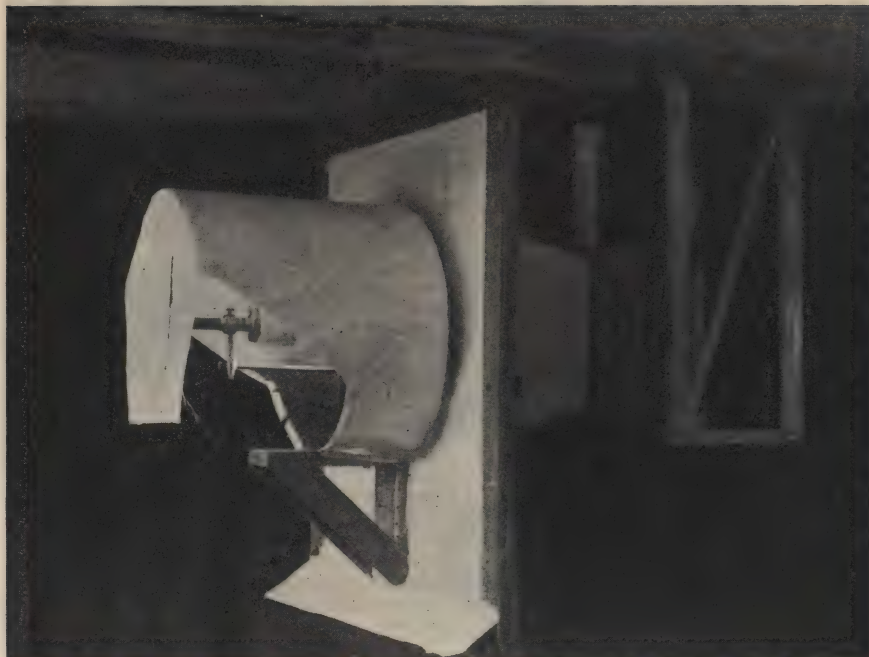


Fig. 1

to get a more accurate picture of what I had seen. This gave me new life, photographically speaking, and since then I have done quite a bit in gum and, while I do not advise the amateur to print all his pictures in this fascinating process — because the great majority of scenes can be taken in such a way as to make beautiful pictures when printed on such papers as Velox, bromide, platinum, etc. — nevertheless, when opportunity offers to put more of one's personality into the picture, I advise gum. In this way one is able to do what no one else in the world can do with that particular picture — give others a glimpse of that wondrous beauty with which nature gladdened the soul of the camerist.

After all, one of the greatest joys and perhaps the chief justification for the expenditure of time and patience in this way is one's pleasure and education. It is a source of delightful memories of happy hours spent in tramping the fields and woods, in the "balmy air," with "singing birds and whispering trees" and all that makes summer joyous; or in the cold, chaste days of winter, with the beautiful snow and the strong, invigorating winds from the hills. And so memory is brightened, life is sweetened and the warm-heartedness of youth is kept alive.

* * *

BRINGING THE OLD ENLARGER UP TO DATE

EDWIN B. COLLINS

New ideas for photographic apparatus are constantly appearing and they have to justify their own existence by comparative tests with older arrangements. If the later schemes prove to be superior, the next step is to determine whether to discard the old entirely or to alter it to bring it up to date.

We were much taken with the good points of some of the vertical enlargers described in the pages

of this magazine and our first impulse was to abandon our overhead track and adopt the new ideas entirely, but when we imagined such an apparatus in operation, our long back bending to place the paper near the floor, and the many "ups and downs" incident to its use, we decided to remodel the old enlarger. We have found it a great advantage to work with the optical axis of the enlarger on a level with the eye, and the testimony of many others confirms us in the belief that it is far more comfortable.

Better adjustments were needed, however, so the negative carrier described in "Shop Notes" for March 1918 was perfected. Our paper holder was away behind the times. The most satisfactory device of this sort that we have used is the one the inventor said could not be improved. Sometimes we think he was right. It consists merely of a cut out cardboard mask and push pin; the upper right corner pin being removed to insert the paper. Two pins at the bottom and one at the left serve as guides. The opening is cut, ordinarily, 1-8 inch to 1-4 inch smaller all around than the sheet to be printed. A white margin is thus left on the print and takes the place of a sub-mount. If "sheet prints" or wide margins are wanted, the opening is cut smaller, guide pins left the same, and greater care used in inserting the paper. See Fig. 2. Sharp, black lines should be drawn on the white paper surface of the easel, centering vertically and horizontally. Corresponding lines should be drawn on the margins of the masks, centering on the opening. This permits rapid and accurate placing of different sizes as they are required. It is well to have a complete stock of masks on hand and within easy reach to avoid delay by stopping to cut new ones. A darker shade of cardboard is used for the masks as a help in defining the boundaries of the picture, especially when using

only a part of the original negative. These center lines also help very much in composing the picture. It is surprising how prominent objects arrange themselves exactly in the center when their really strong position is in some other place, the center being the weakest point. These lines help in getting objects in the proper balance, seldom equally distant or of equal size, but a small object near one edge balancing a larger one the other side of but nearer to the center.

Another use for the vertical line is in truing up buildings or other objects of an upright nature. The horizontal line helps to level up the distant shore line in a waterscape. Such lines should be followed rather than the margins of the film for it is seldom that the hand camera is held truly level when used without a tripod. Pictures lack stability and repose when water appears to be running down hill or when buildings are toppling over or leaning backwards. The latter effect is the result of tipping up a hand camera in order to take in the top of a tall building.

Various devices for correcting this effect in enlarging have been described, but we were not quite satisfied with any until we perfected the device shown in Fig. 2, the back of the easel being hinged at the top and operated with a small transom lift.

The negative is put in so that the image shows upside down and the easel is swung out until the lines of the building are parallel with the marginal and center lines of the mask. Careful focusing is necessary, just as it is when using the swing back of a view camera.

With $6\frac{1}{2}$ " condensing lenses and 100 Watt lamp we had failed to get satisfactory lighting for 4 x 5 and post card size negatives, so we have installed a No. 12 E Parallax reflecting condenser, using a 300 watt nitro filled Mazda lamp. This gives good illumination for any negative up to 5 x 7.

Not having the use of an adjoining room which is recommended for the sake of avoiding too much heat and of obtaining ventilation, we were confronted with a new problem the solution of which may be of interest to those who are similarly situated.

There is a window shutter in line with our enlarger (which formerly was used with daylight) and the parallax reflector is mounted on the outside of this shutter, supported on a strong wooden bracket, slotted to permit horizontal adjustment of about five inches. A circular opening the size of the reflector is cut in the shutter and a light-tight connection made to the camera back. A weather-proof hood is built outside to cover exposed parts and to permit free circulation of air. Both the outside and inside hoods are made of mounting board, a double-faced, thin, tough material where bending was necessary and a heavier card for the top and bottom of the inside hood. The side pieces of the latter were cut to permit of a half inch lap, edges moistened before bending and all corners glued before fastening to the shutter. Some new methods of clamping were used to hold the various pieces of board in place while the glue was setting. Old, rusty carpet tacks put through two pieces had great holding power, were easily removed, and the holes were covered with corner binding put on later. For clamping near edges, a nickel's worth of spring clothes pins were used to good advantage. These simple little tools have many very useful functions about a photographic work room, not the least of which is in handling prints in the developer and hypo. For the purpose

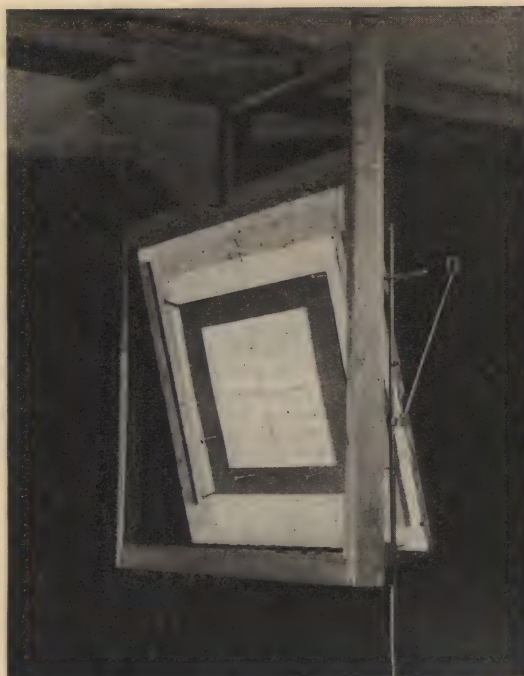


Fig. 2

the ends need sharpening a bit. Snap one on the edge of each tray when not in use and you may keep your fingers dry and your prints clean.

The inner end of the hood which fits into the camera back was reinforced with wood strips, 3-16" x 5-16", glued and tacked to the board with 1 oz. tacks. All corners and angles were then covered with strips of opaque black paper pasted in place and an inside cover to shut out the light when developing, etc., made after the manner of a box lid, completed this part.

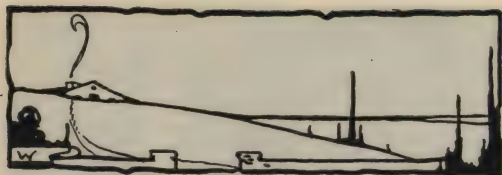
The outside hood was slashed on one edge into squares about 1" x 1", turned up at right angles and tacked to the shutter as the hood was bent into place. The other edge was cut with wedge shaped gashes so the flaps could be turned down without overlapping and fastened to the end piece.

White oil-cloth was pasted and tacked to the outside of the hood and shutter and the seams calked with melted paraffin. As a test of ventilation, we may say that the paraffin has not softened to any extent even during a thirty minute test exposure, and this suggests that the lining of asbestos paper was hardly necessary.

The shutter is hung on loose pin-buttts, readily detachable, and may be hung on a carrier and slid out of the way on the track or lifted off and stored when not in use.

Fig. 1 shows the shutter hanging from the track, the outside hood in the foreground, camera back extension in place, inside cover put on to confine the light which is lighted to show up the under surface of the hood, etc.

Fig. 2 shows the remodeled easel with the swing back tilted to about the extreme yet used and mask for 8" x 10" prints in place.



LOCAL MANIPULATION

I have not been able to make out whether it is because the photographing public is too harassed paying for automobiles, or just what the reason is, but for one reason or another we do not seem to see so much interest in funny photographs as we did before the war. I recall that readers used to send me all sorts of amusing pictures which they had obtained; some of them chance shots in the open, others things worked out at home with ridiculous arrangements of toys and other articles, often bringing into the view a cat or a puppy or maybe a chick or two. All this seems to have gone out of style with the oldtimers, and I should judge that the newcomers must consider it beneath their photographic dignity to indulge in such absurdities.

Going through a drawer the other day, I came upon a collection of pictures of this sort, and it brought back the pre-war days with a warm glow of reminiscence. I don't know that I should want everything to be put *in statu quo*, but certainly people seem to have got more genuine enjoyment then than is the case today. Or do I just imagine it? Be that as it may, I cannot help shaking my head at these amateurs who talk about photography as "camera work" and who dwell on the necessity for a "serious purpose" if results "worth while" are to be obtained. Ye heavens above, what are we all coming to? Isn't it enough to be under a more or less intense strain over the job which earns your living, without pulling a long face over photography as well?

As a matter of fact, there isn't a thing that any of us is doing that amounts to a whale of a lot, and when we pass on to the nimble sport of cloud-hopping on the cerulean pastures, the mundane ranks will close promptly over the gap we leave, and the most we can expect is a little temporary annoyance while the responses to a new "Help Wanted" advertisement are being gone over by those to whom we thought ourselves indispensable. In view of this, why take one's self so seriously?

Far be it from me to encourage anyone to indolence and sloth, or any other of the seven deadly sins, but I for one can't see the holy beauty of pulling a long face at this business of taking pictures. If we can't get some fun out of it, why bother with it at all?

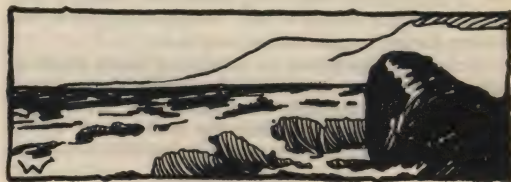
Folks are always misunderstanding me, so I suppose some will think I am urging the amateur to stop taking pains and instead of using his intelligence for picking out good subjects and getting the picture as well as can be done, to snap any old thing with a sort of idiotic playfulness, because that's the way to have fun. On the contrary, it is not the way to have fun, and therefore I do not suggest it. What I do suggest is that he hock his ego, dismissing any idea that if he had been trained along the right lines in his tender years he could easily back Leonardo and Michael Angelo off the map, not to mention Whistler and some other modern numskulls who vainly imag-

ined that they had this landscape stuff sewed up for all time o come.

All the pictures we make are rather ephemeral. Our heirs and assigns are not likely to place upon them a high inventory value. We ourselves may even come to hate them, because they remind us of early crudities in ourselves and our associations which we would rather forget, or of hopes and ambitions which we were not big enough to live up to. The idea that the past is precious is one of the fallacies of the age. As often is it a sepulchre of dead hopes and unrealized dreams of aspirations which turned out to be mortifying flivvers. The greatest boon is not to recall but to forget, and pictures that will not let us forget how asinine we were have little power to charm or to console.

"Pictures from the Past" — there is a subject for such as are of philosophical turn. Put your memory to work, fond reader, and see what glimpses it brings before you that are most pleasant to recall. Are they not little bits here and there that you enjoyed because of some element of pleased surprise, or for no reason at all that you can now account for? Memory picks and chooses. It pushes back the recollection of over-serious moments, and brings up the pleasant little bits that have no apparent significance, because these entail no train of cogitation which may disturb the present mood.

So to accumulate a collection of pictures that will continue to be of interest, my own hunch is to take the pictures that please instead of the pictures that inspire. Most of our inspirations are half-baked, anyhow, whereas a leisurely sense of enjoyment does not go very far wrong. — THE INTENSIFIER.



READERS' CRITICISMS

BEST CRITICISM OF PRINT No. 33

(The following criticism, seems rather too harsh, but otherwise the analysis is good. — CRITICISM EDITOR).

This print is a typical amateur print, such as may be found in any push-the-lever snapshooter's album. The picture was no doubt taken with a fixed-focus-box-type camera.

Underexposure with overdevelopment is evidenced by the detailless black lines of the steps — and overdevelopment by the blocked up highlights.

This is truly a black and white print, the result of a hasty, thoughtless desire to produce something without effort.

In other words the print is lacking any good qualities even so far as the mechanical operations of photography go.

The other quality, so desirable in a picture, besides tonal values, namely composition, is not there either. The heavy horizontal prominent and distracting black shadows of the steps need no further

criticism. The children, while showing a slight but not too energetic interest in that which "is coming," do not convey that feeling to the onlooker that should be there.

One who has been around children knows that anything that would cause a child to exclaim "See what's coming," would also cause bodily action and especially so when the child's view is slightly obstructed. For example, the child to the left would almost naturally jump up and stand, in order to see better.

The picture was taken in the wrong position. A strikingly natural picture would have been produced had the child to the left been in the act of rising while the one to the right was standing, placing them to left of the center of a picture taken in the vertical form, thereby allowing space for that which is coming to enter the picture. This type of a picture isn't one that really needs criticism, as it doesn't seem as though the originator tried to be serious in that which was produced. — F. B. MARCHIALETTE, Detroit, Mich.

OTHER CRITICISMS

In looking at the New Readers' Criticism Print No. 33, "See What's Coming," I would say that the first glance shows that there is something radically wrong with the background of this picture and the second one indicates the fact that the general lighting is at fault.

Now, disregarding the lighting, let us first see how we could otherwise improve this picture. Cover up an inch of the right-hand end of the picture and see how much of an improvement even this little alteration makes. If the camera had been held upright so as to make a vertical picture, less of the steps would have appeared and we would have a better view of that part of the house behind the children. As it is now, the top part of the background is cut off. The picture could also have been taken from a little farther distance away, thus adding a trifle more foreground and giving a better perspective.

Now as to the lighting, it is apparent that this comes from a point too far overhead. This causes an unnatural lighting of the children's faces and makes the top of the steps look like two shelves extending across the picture. Thus we find two main faults which were caused by:

First — The camera being held to produce a horizontal instead of a vertical picture.

Second — The light came from a point directly overhead, causing bad lighting of the faces, and the front of the steps to appear in shadow.

The expression of the children's faces is excellent, and this, together with their attitude, harmonizes perfectly with the subject of the picture. If attention were given to the faults mentioned above, I believe this picture would present an entirely different aspect. — ELMER J. ZUFELT.

Good material gone to waste, due to lack of definite motif thoughtfully handled. Why the brooms so stiffly held? Wm. Morris advised people to have nothing in their homes which was not beautiful or useful. This applies equally to the material employed in producing a pictorial composition, and in the present instance the brooms are neither beautiful nor useful.

The steps are no doubt useful to members of the household, but their representation by sharp bands

of black and white running entirely across the picture-space is distracting.

A third of the entire print upon the right-hand side could well be removed, and about half the area between the left margin and child nearest that side, leaving an upright rectangle. An assortment of clapboards, door-panels, and black spaces does not furnish an agreeable background. Exposure altogether too short to give proper gradation — result, inky black shadows, and chalk-like whiteness in the children's costumes.

Should the steps be utilized again as a setting for a sitting, have them in perspective, thus avoiding repetition of parallel lines in an undesirable manner; get the attractive young models interested in some object or occupation which will speak for itself, and look for a simpler background. — WILLIAM S. DAVIS.

On the steps is one of the worst places to take a picture, because of the straight lines of the steps. If the picture has to be taken on the steps, it is best to have the sun lower in the sky, so the harsh white lines of the steps would be taken out.

The doors should be closed behind the girls, because the open doors make big dark spots in the background.

With so many horizontal lines on the steps, there should be more vertical lines so the picture would not look as if it had been made in layers.

The girls are too near the center of the picture. The right-hand girl should have on light stockings like the other little girl, and the broom she is holding should be taken out from behind her head, so that it would not look as if it was sticking out of her head.

There is something wrong in this picture that makes the white parts seem too white and the dark parts too dark, but it is impossible to tell what it is, because we were not told how the picture was taken or developed or printed. I should think it was underexposed.

The taker of this picture has not made the same mistake many people do, of having the girls look at the camera, but it would have been better if they were looking at something that is shown in the picture.

If you should draw a line between the two girls and trim off the edges you would make two little pictures that are both better than the big picture. If there was something near the center of the picture or between the girls that they were both playing with, there would not be any divided interest as there is now in this picture. — GEO. T. CRAWFORD.

(NOTE BY CRITICISM EDITOR. — We are informed by the maker of this picture that both the girls are boys).

It would be interesting to mentally reconstruct the conditions under which this picture was probably taken. The tots were playing soldier, — a broom to that age has a stronger military than domestic significance. The photographer saw a golden opportunity and seized it — together with his hand camera. He might well have snapped them on the march, but convention was too strong for him and he told them to sit down "and have their picture taken." Fate was with him, however, in attracting their attention, and a charmingly sincere and unconventional pose is the result. Quick action was necessary and the camera was titled in the shuffle, but the snap was made at the right time, and, after all, in pictures of children that is the important thing.

This matter of holding the camera level is of



Criticism Print No. 33

slight importance to the man who does his own work, for he may enlarge or trim to suit his fancy, but for him who patronizes the corner drug store (and I suspect this to be the product of such), accurate leveling is necessary. The critic may still say trim, but who wants to trim the white border off of a snapshot that is too small already? It is not hard to hold the camera level by "feel" rather than by sighting. A little practice and a firm grip on the parallel sides of the instrument will do wonders in this direction. A pocket camera should be operated like a car — with the eyes on the road and not on the clutch or gear shift. I do not accuse this photographer of keeping his eyes on the camera — far from it — but I suggest that he practice holding the camera level and "seeing how it feels" that way.

Other faults in the picture may be excused by the necessity for haste and in the hands of a clever manipulator could be made negligible. Slight reduction with ammonium persulphate, or intensification by redevelopment, or both, or even printing on softer paper, would lessen the contrasts of underexposure. A bottle of India ink, a brush, and an enlarging camera, would remove the objectionable house level with the top step, and new and tasty clapboarding could be put on (if desired) with a lead pencil and a ruler. There is nothing to prevent a good picture being made from this negative with the right amount of care and interest. — LEWIS A. HARLOW.

All of us make many pictures which would be much better if certain things were done or not done, or conditions changed, as the case might be. My own experience has been that only a small per cent of the pictures I have taken were entirely satisfactory. Especially is this true of the pictures in which people were included. I gladly second the motion of another writer that the word (and spirit) of suggestion be used rather than that of criticism.

Turning to the matter in hand we can see that the maker of the picture has endeavored to make a genre study. The children are apparently watching some expected arrival but their faces express apprehension rather than anticipation. Perhaps they had to wait for the picture person to unwind a new roll of film before the guest arrived. If so he should

have passed on and taken the picture some other time. No use trying to photograph children if there is a wait on the program.

The print shown has so many technical faults that considerable improvement is out of the question. The background is very poor. The straight lines of light and shade running across and the patchy outlines of the house defy removal. Trimming $1\frac{1}{2}$ inches from the right and $\frac{1}{4}$ inch from the bottom seems to be best. But this would not remove the serious underexposure revealed by the extreme contrasts and lack of definition in the shadows.

So let the next picture have (1) more natural pose of the subjects, (2) a better background, (3) more exposure, and (4) more careful trimming. (If you don't do your own finishing make a start at it now.) — RALPH BEEBE.

NEW CRITICISM PRINT NO. 36

Readers' Criticism Print No. 36 was made with a $2\frac{1}{2} \times 4\frac{1}{4}$ roll-film camera, the exposure being 1-25 second at $f:6.3$ with a light color screen on the lens. Time, around 3 P. M. in July, good sunlight. Print on linen surface paper. For the best criticism of this print received by January 15 a credit of \$2.00 towards books of our publication will be awarded. Address the Readers' Criticism Editor, and kindly write any other communication on a separate sheet of paper.



THE QUESTION BOX

BEST ANSWER TO SEPTEMBER QUESTION
FOR READERS

What type of negative is best suited to enlarging?
The ideal negative for enlarging possesses —



New Criticism Print No. 36

1. Satisfactory tonal quality.
2. A fine-grain image.
3. The kind of lens-definition which will give the enlarged print the same character one would aim to secure in one made by contact from a large direct negative.

4. Freedom from mechanical defects.

Satisfactory tonal quality is that which adequately renders the natural gradations existing in the scene photographed, or best expresses the idea it is desired to convey. As enlargements usually show more contrast than contact prints upon the same grade of paper, it is advisable to keep the negative rather soft and thin, to permit the illuminant used penetrating all parts which possess gradation.

Since the silver image in a gelatine emulsion is granular in structure, it is especially important to have this as fine as possible in small negatives which are to be subjected to a high degree of enlargement. While this matter is largely a problem for the plate and film makers to solve, full exposure and employment of a dilute developer tend to give an image of the finest possible grain. Where possible, the use of slower plates in place of the ultra-rapid grades favors the formation of a fine grained image. (See note below. — *Ed.*)

It has long been regarded as essential to focus as sharply as possible when making negatives with a view to enlargement, but this is not always the best procedure. If some diffusion, particularly differentiation of sharpness in different planes, is needed to convey the desired impression, an effort should be made to get this in the negative, when the image is focused visually rather than by scale. In doing this, however, it is necessary to keep in mind the amount of softness wanted in an enlargement of a given size, and reduce the diffusion in the negative proportionately to the number of diameters enlargement it will have to bear to make a print of the size required. This may seem difficult of accomplishment, but experience is a good teacher, and when making negatives not smaller than $3\frac{1}{4} \times 4\frac{1}{4}$ with a view to obtaining enlargements of only two or three diameters, it is possible to judge the effect quite closely. Such nicety of focusing is, of course, out of the question in snap-shot work and when working with miniature pocket cameras. Under these conditions the wisest plan is to get as sharp definition as possible, trusting

to other means of introducing diffusion in the print, when this seems necessary.

Freedom from mechanical blemishes, such as "pin holes" and scratches, is obviously essential if one would avoid the necessity for a lot of difficult retouching upon each print. Clean negatives are best insured by dusting the interior of camera and plate-holders frequently; keeping all solutions free from sediment; never touching the sensitive surface of the plate or film with the fingers, and, as the negative is taken from the washing tank, *very gently* wiping both sides with a wet tuft of absorbent cotton before setting up to dry. — W. S. DAVIS, Orient, N. Y.

NOTE — Mr. Davis's advice regarding the use of slower plates in place of the ultra-rapid grades should be accepted with some reservations. The real point here is not so much speed or lack of it as latitude in exposure. On this score the literature of photography has not kept pace with the progress in emulsion-making. It is still assumed that while an emulsion of medium speed can be overexposed with impunity, a really fast emulsion must be exposed pretty near right or it will "turn over," becoming flat and "blocky," with the coarse-grain effect referred to above. For this reason advanced amateurs, who run to time exposures with a tripod, have been chary of extra-fast plates and films, but meanwhile emulsion-makers have been concentrating on this problem of producing fast emulsions that do not turn over as formerly with full exposure, and remarkable strides have been made in this direction. Still greater results may be looked for along these lines in the next few years. The best fast plates and films are now so much better in respect to latitude than was formerly the case that a generalization on the subject is no longer safe, and the only wise course is to observe the behavior of the particular emulsion you are using and be guided accordingly. Further, it may be said that excellence is not necessarily assured in a plate or film because it happens to be slow, for lack of speed is often a sign of short register,¹ or too few steps in the scale to render all the tones in the picture with fidelity.

DECEMBER QUESTION FOR READERS

What kind of pictures are best suited to tinting,

and what mistakes should be avoided in tinting or coloring photographs?

For the best answer to this question received by January 15 a credit of \$2.00 towards books of our publication will be awarded. Address the Question Box Editor, and write on one side of the paper only.

ANOTHER ANSWER TO THE AUGUST QUESTION

By profession I am a civil engineer. My work has to do largely with making reports and investigations of possible power sites, dam sites, reservoir sites, and similar projects. I have followed this line in Idaho, Wyoming, Oregon and to some extent in Arizona.

In making these preliminary reports and investigations I have often traveled into remote regions, and my camera is always with me. It is very necessary, for instance, in describing a watershed as being timbered, or partly so to show by pictures, just what I might mean by "partly timbered." The fact that a watershed is timbered, and to what extent it is covered, makes considerable difference in forming one's judgment as to the runoff, especially in a new section where water records have not been maintained for a number of years.

If there is a dam involved in the project, whether power or irrigation, it is necessary to show several views of the location, to show the character of the surface, the material and possibilities of bed rock.

In the case of existing structures, a photographic record of the style and type of structure is valuable. During construction, pictures taken at regular intervals show the progress of the work and are kept in the files with other data.

Pictures taken at intervals of structures that are experimental and are undergoing test are also valuable. This is often done in irrigation work, as we are always seeking the best for the least money.

In making up reports, I find that photographs are best included by either treating the paper with chemicals that are sold for making printing-out pictures, or sometimes blue-print compound, or by enlarging on a thin paper and binding directly in the report. I always use letter-size paper, $8\frac{1}{2} \times 11$. The regular paper is treated and the prints are made directly. This avoids pasting on prints, which make the report bulky and cumbersome. Besides, prints sometimes detach themselves from a much-used report. In enlarging, a 7×11 paper can be used; with hinge tape attach a strip of paper $1\frac{1}{2}$ inches wide to the left-hand edge and bind in with the rest of the report.

Maps are sometimes photographed and reduced to a size so that they may be included in the report. Where many copies are to be made it pays in the case of maps to make an enlarged negative (paper) and have blueprints made directly, or even vandyke prints as they are called when made up in black and white.

To make a report still further attractive the pictures may be colored. I use oils, as I find them so simple, especially when corrections must be made.

I find a small camera about $2\frac{1}{4} \times 3\frac{1}{4}$ a handy instrument to have around on surveying trips. I often see pictures that I would not be able to come back to, on account of distance, time, or other reason. A panorama is best for picturing reservoir sites, or to give a wide view of a watershed from a high point.

My hobby is scenic pictures, and I have many opportunities to satisfy my desire. This interming-

ling of vocation with avocation is a happy combination and is not often to be had.

Pictures of reservoir sites, etc., are often faked to show how the site will look after construction. I recall seeing a picture made a few years ago of the American Falls Dam, which is about to be started by the U. S. Reclamation Service in eastern Idaho, which showed the completed dam and the reservoir full of water. The picture was worked up by an engineer who was somewhat of an artist. The perspective was excellent and the effect all that could be desired.

As a side issue, I often sell photographs and sometimes negatives, and my photographing hobby is put on a self-sustaining basis, or nearly so. — JAMES B. HAYS.



OUR COMPETITIONS

OUR ANNUAL COMPETITION

We publish in the advertising pages of the current issue formal notice of the conditions of our Third Annual Competition in which as usual cash prizes amounting to three hundred dollars and honorable mentions of lesser value are to be awarded. We hope that our readers will be liberal in the selection of their best prints for entry in this competition, for we expect to continue the practice of the past two years and send the prize-winning prints and a substantial number of the honorable mention prints on a tour of camera clubs throughout the United States. We feel, and have had our opinion confirmed by competent critics, that the standard of the collections exhibited as a result of this competition in the last two years has been very high and that these exhibitions have given pictorialists and lovers of art in many places throughout the United States the opportunity to see a really representative collection of modern photography which, if it did not attain the standard of one of the international salons, still included enough work of salon standard and by salon exhibitors to show pictorialists what is regarded by judges and juries as high class modern photographic work.

We would like to reproduce here a few of the great number of enthusiastic letters which have been sent us by those who have seen these shows, telling what has been their effect on their community and the enthusiasm which has been aroused by them. It seems to us that the help which has been given pictorialists in the smaller towns by seeing these pictures has been sufficiently great to justify us in asking salon exhibitors to send us prints of salon quality for inclusion in the next competition and exhibition.

The 1922 prints were, or will be before December first, exhibited in the following places: New York City; State College, Pa.; Wilkes-Barre, Pa.; Worcester, Mass.; Boston, Mass.; Portland, Me.; Oakland, Cal.; San Diego, Cal.; San Francisco, Cal.; and Sacramento, Cal. Thus it will be seen that photographers from coast to coast have seen these pictures and we hope to arrange a similar schedule next year. If our friends of the camera clubs who would

like to see this exhibition will let us hear from them at an early date, we will endeavor to work out a schedule which will cover as many places as possible. We would suggest that two weeks be the maximum time for exhibition, as it is necessary to allow on the average a week or more between exhibitions.

SENIOR COMPETITION

Readers of the magazine occasionally write to us and ask for particulars as to the competitions, saying that, although the results are published every month, no information is given as to who is eligible or as to how prints should be submitted. It is our intention to publish the full rules of the competition each month in the advertising pages, although they are occasionally left out. Readers who do not desire to cut the competition blanks from the magazine may obtain a supply by writing to this office for them.

The first prize in the October senior competition was awarded to M. L. Shattuck for his charming picture entitled "Frivolity." It seems to us that this excellently expresses the light-heartedness of youth and that the features, costume, and pose of the young lady in every respect carry out the title. The space is excellently filled and the whole impression is pleasing. This was made with an 8 x 10 Eastman View camera fitted with a 14½ in. Verito lens. The exposure in a studio in northern New York by diffused light together with 6 150-watt lamps at 2 P. M. in August was ½ second at f:4. The Eastman portrait film was developed with pyro-soda and printed on Vitava Athena M. White.

The second prize was awarded to E. W. Tetzlaff for his portrait of Robert DeLand, a direct and convincing piece of work, solid and massive in its arrangement and treatment as befits the strong lines of the face of the man portrayed. A light background would have materially weakened this print. Made with a 5 x 7 Seneca camera equipped with an 8¾ inch Verito lens. The exposure was made in Milwaukee by artificial light in March at f:4.5. The Portrait film was developed in pyro and printed on Portrait Bromide D rough.

The third prize was awarded to Alexander Murray for "Winter in the Weld Woods," a very interesting rendering of snow. Not only is the quality of the print beyond reproach, but the arrangement showing a vista between the heavy masses on each side is pleasing and interesting. Made in West Roxbury, Mass., with a vest pocket Kodak equipped with a 3-inch meniscus lens. The exposure at 2.30 P. M. in February in bright light was 1-25 second with stop No. 2. The Eastman N. C. film was developed with amidol and enlarged on Defender Velour Black.

Honorable Mentions were awarded as follows:

Ready for the Flight	John H. Becker
A Doorway	Fred E. Crum
I Spy	Juventino Ocampo
A Glimpse of the Brook	H. B. Rudolph
Apple Blossoms	Walter Rutherford
The Tug	J. H. Saunders
Summer Landscape	U. Shindo
The Athlete	Mrs. S. Smith

Commendations were awarded as follows:

Gorge and Lower Falls — Letchworth Park	F. E. Bronson
Into the Valley and the Shadow	Edwin B. Collins
Filling the Silo	Robt. Edgar DeLand
Outdoor Portrait	J. H. Field
The White Blouse	Theo. M. Fisher
Into the Hush of Eventide	J. K. Hodges
Beyond	Jiro Ito

Stony Brook Falls
On the River Bank
An English Garden
The Dream Castle
Home Portrait
The Pile Driver
Bend in the River
Winter Sunset
By the Silvery Rio Grande
Evening Splendor
Modern Mill Dam
The Squatter's Cabin
The Porch
The Old Susquehanna River
Fall Trees
The Turn in the Road

Garnet E. Jacques
E. E. Jones
Jas. D. Keller
Warren R. Laity
Frank H. Luwen
Stephen Marsh
F. W. G. Moebus
Louis R. Murray
F. A. Northrup
J. A. Singler
E. H. Smith
John C. Stick
B. M. Whitlock
F. N. Titus
Herman D. Warren
J. A. Wright

JUNIOR COMPETITION

The first prize in the Junior competition was awarded to Harold C. Alley for "An Adventure in the Park," a story-telling picture of excellent quality and much interest. Whether posed or discovered, the incident is well worth photographing and both foreground and background are excellently handled. This was made with a 2¼ x 3¼ R. B. Graflex fitted with a 6-inch Wollensak Velostigmat II. The exposure at 4 P. M. in April in good sunlight in Portland, Maine, was 1-25 second at f:5.6. The Premo Film pack was developed in pyro and printed on Artura Carbon black D.

The second prize was awarded to Howard E. Louis for his character study of a "Modern Flapper." As the subject of this picture is a young lady of the South, we can but assume that the South is not behind Broadway in its modern tendencies and that the American girl is more or less of a constant quality whether photographed under the bright white lights or, as this one is, "far from the madding crowd." The attitude certainly suggests the modern tendency of youth to be a bit defiant of traditions and outworn opinions. Made with a 2C Ansco camera equipped with an f:7.7 anastigmat. The exposure at 2.30 P. M. in July in good light in Jackson, Tennessee, was 1-25 second at full opening. The Eastman Speed film was developed with Monomet-hydrochinon and printed on Eastman Bromide.

Honorable mentions were awarded as follows:

The Spiral Staircase	W. H. C. Carriere
The Wood Nymphs	Louis Elowitch
Rev. P. — Portrait Study	John P. Geertz
La Pica	Simon Jochamowitz
Uncle John	Oliver R. Mills
Rapids & Pools	Fred Ryan
The First Fall	Alfred S. Upton
Yellow Currants	John Wilkins

Commendations were awarded as follows:

When Brother Wouldn't Pose	W. E. Babb
A Puff — but no Powder	Ralph B. Bonwit
Along the Skokie	H. J. Brennan
Autumn Sunlight	G. H. Brown
Oh My	Mrs. Harry D. Burns
"Allesamee You Makem Fix"	H. T. G. Bush
In the Animal Tent	Franklin Chapman
The Gourmand	Miss C. Clarke
The Coming Storm	Herbert Coates
Kansas University	Richard Crawford
Lover's Retreat	Herbert L. Douglas
In the Tropics	Herb. O. Egan
Along the Hudson	E. A. Ellsworth
The Fisherman's Shanty	Pearl L. Farmer
Sunset	L. O. Field
A Grey Day in Autumn	A. T. Flikke

The Tireless Worker	Myron W. Glenn	J. A. Singler 18	John N. Consdorf 7
Portrait of a Child	Alfred Gradwell	Gus Schinkel 17	Wm. S. Davis 7
A Devonshire Cottage	Jas. H. Grime	E. E. Jones 16	W. H. Finch 7
Over the Hills and Far Away	Arthur W. Grumbine	F. E. Bronson 15	Paul E. Guillot 7
Twilight	H. J. Haebule	Stephen Marsh 15	Gregory L. Oliver 7
Helen from Helena	Jas. E. Harris	B. M. Whitlock 15	Roy H. Heiser 6
A Tea Party	Willard H. Harting	Arthur Palme 14	H. E. Horrigan 6
Reflection	C. V. Hewitt	Julien J. Proskauer 14	Wm. B. Imlach 6
The Shadowed Door	Ellen C. Hildebrand	C. N. Harris 13	Frank H. Lewen 6
Valley Shadows	J. R. Hunter	J. K. Hodges 13	John C. Stick 6
Entrance to the Harbor	John Janson	Leo Kraft 11	Wm. D. Goodwin 5
Still Life	Thomas A. Johnson	Jiro Ito 10	Chas. T. Graves 5
Along Sconodoah Creek	Mrs. C. H. Johnston	Geo. Miller, Jr. 10	C. A. Heald 5
Sunkissed	W. Keibel	Herbert C. McKay 5	
Watching	Arthur M. Keith	HONORABLE MENTION, JUNIOR CLASS	
The Old Mill	Wm. B. Kemp	J. W. Jeffers 6	Theo M. Fisher 5
Wooster Pike	Jas. B. Kent	Edwards H. Smith 6	Garnet E. Jacques 5
Shadows at Sunset	Mabel Klinger	Robert E. Deland 5	P. F. Squier 5
On the Milk River, Jamaica	Oscar V. Lacy	Alfred S. Upton 5	
The Old and the New	J. A. Lederman	COMMENDATION, JUNIOR CLASS	
Homeward Bound	J. H. P. Logan	John Ziemanski 23	A. C. Norton 10
A Land of Dreams	J. S. Loomis	W. Keibel 27	M. W. Osterweis 10
The Steam Shovel	Franklin G. McIntosh	F. H. Chant 23	Ralph Beebe 9
Hot Coffee and a Cold Day	H. J. Mahlenbrock	H. J. Brennan 19	Chester Demaree 9
Sheep Feeding	Philip Mehler	Howard E. Louis 19	John P. Geertz 9
Barrie Boy	Walter S. Meyers	Wm. E. Barr 18	Ford E. Samuel 9
Morning Beach	Taro Miyake	Harvey C. Pendery 18	Mrs. E. C. Hildebrand 8
Full of Fun	A. C. Morton	Paul Richardson 18	John Janson 8
Under the Very White Deck	T. O'Hara	Edw. L. Gilroy 17	I. Komamiya 8
Beneath the Old Elm Tree	Aug. W. Paulsen	W. W. Kuntz 16	Ralph B. Bonwit 7
Mirror Lake	Stanley Pesek	H. J. Mahlenbrock 15	E. J. Browne 7
The End of a Day's Flight	Geo. Raeburn	Howard K. Rowe 15	Franklin Chapman 7
Clouds Adrift	Julia Rhodes	L. Archambault 14	Jas. S. Loomis 7
June	Paul Richardson	Willard H. Harting 13	Dr. C. W. Pratt 7
Breakfast Time in the Park	C. B. Rosher	C. V. Hewitt 13	C. B. Rosher 7
High Bridge	A. J. Schneider	J. F. Webster 13	A. M. Tomlinson 7
Hatchery, Castalia Trout Stream	L. B. Schneider	Miles J. Breuer 12	Harold B. Winslow 7
Breaking Out	L. F. Shaffer	Herbert L. Douglas 12	J. L. Clyburn 6
Thoughtful	L. C. Shearer	J. R. Frow 12	Franklin G. McIntosh 6
Pals	S. Shiner	Simon Jochamowitz 12	Philip Mehler 6
Putnam Elms	Mrs. A. H. Smith	A. S. Workman 12	Arthur W. Moreau 6
Geese	W. J. Stenrod	Walter P. Bruning 11	R. D. Wilson 6
The Young Haymaker	J. A. Stevenson	Wm. Ludlum 11	Arthur S. Yoshida 6
Pecan Grove	W. L. Thompson	Ivan Sokoloff 11	Horace T. G. Bush 5
The Race	R. S. Toman	John H. D. Blanke 10	Ralph S. Hayes 5
Vacation Days	A. Turcotte	A. T. Flikke 10	I Higo 5
Bowman Study	Lloyd B. Valentine	Fred Goodin 10	W. H. Poet 5
Lightning	John B. Ziemanski	Mrs. C. H. Johnston 10	L. B. Schneider 5
		H. H. Van Kernen 5	

ROLL OF HONOR

FIRST PRIZE

J. H. Field 9 George W. French 5

SECOND PRIZE

H. B. Rudolph 7 Alexander Murray 6
Kenneth D. Smith 7 Lyle A. Morse 5

THIRD PRIZE

J. Herbert Saunders 8 Jared Gardner 6
Mrs. Sterling Smith 5

HONORABLE MENTION, SENIOR CLASS

W. Kitchen 12 Lawrence Baker 7
Sotaro Saba 12 Clark H. Rutter 7
Louis A. Dyar 11 Louis R. Murray 6
Juventino Ocampo 11 F. A. Northrup 6
Fred E. Crum 10 James Thomson 6
Herbert J. Harper 10 Walter L. Bogert 5
Walter Rutherford 10 Stefano Bricarelli 5
Edwin B. Collins 8 Warren R. Laity 5
Elizabeth B. Wotkyns 5

COMMENDATION, SENIOR CLASS

Margaret S. Hitchcock 32 Herman D. Warren 10
Dr. E. L. C. McGinnis 18 M. L. Shattuck 8



OUR ILLUSTRATIONS

As the principal pictorial adornment of this number we have reproduced a series of eight prints by members of the Vienna Camera Club. These cover a rather wide range of subject and fully bear out the reputation which the members of this club have had for many years, of belonging to an exceptionally gifted group of workers, one whose pictorial training is fundamentally based on the eternal verities of art and whose ability to express their ideas is commensurate with the foundation on which it is

based. The group contains a number of highly skilled exponents of bromoil and bromoil transfer, by which processes most of the work of the club is produced. In fact, Dr. Emil Mayer, the president of the club, has carried the technique of bromoil to a point considerably more advanced than that of any other writer on the subject, and his book on this process is a masterpiece of technical knowledge and clear and lucid exposition. It may not be amiss to mention here that we have acquired the rights to translate this book into English and that it is now in the process of publication. We hope to issue it about the first of January, in a volume similar in size and style to "Practical Color Photography," at a probable price of \$2.00. It will contain full instructions on the subject of bromoil and bromoil transfer, together with the directions for preparation of inks for the process. It is rather different from most books on the subject in that it describes but a single line of procedure without variations, explains each step of the process with the utmost precision, warns against pitfalls, and details all possible difficulties, and so leads the reader step by step from the beginning to a successful completion of this fascinating process. We are sure that all our readers who are interested in pictorial processes will find this book will give them a means of expression of the utmost value.

To return to our pictures. "On the Park Lake" doubtless has as its foundation a casual snapshot. The moment for making the exposure was, however, so happily chosen that the result is unexpectedly pleasing. The rush of one bird with erected wings is strongly contrasted with the calm contentment of the other, and we are left to guess what is the cause of this unusual activity. The composition is interestingly spaced. Page 749.

"Unter Den Lauben," by Betti Mautner, combines the charm of an old world courtyard with an interesting study in figure posing and lighting. The spacing is most interesting and the contrast of darks against lights well calculated to make an interesting picture and to carry the attention through to a distant plane beyond the arch. Page 759.

"Study," by Johannes Krone; and "Portrait," by Annie Hatschek, are two interesting studies of age. The ingrained action of a lifetime, the marks of wear and strife imparted to ancient countenances by the hazards of life, the characteristic peculiarities of attire and gesture which belong to the old, are always an attractive study for photography. These two pictures differ markedly in arrangement and treatment, but both are excellent and characteristic portraits. Pages 760 and 761.

"Surf," by Adolf Fritz, like the other picture by this worker, is the result of a snapshot. Evidently Mr. Fritz delights in seizing momentary phases of nature. In the present instance, he has caught the masses of broken water and spray in a fashion which is far more than literal. It does not give us the impression of suddenly arrested motion, but we feel as if the wave were still in the act of breaking, and were likely to crash forward at us as we look at it. It is an unusual achievement in surf photography. Page 770.

"Churchyard in Winter," by Karl Suchy, is a quaint and interesting architectural study. Both subject and treatment show the result of careful thought and successful action. Page 771.

"Portrait," by Johannes Krone, is a pleasing study of the full flush of youth and is also a direct

and extremely well balanced portrait. Page 781.

"Mirage," by Karl Suchy, is a landscape which might have been made in New England, as far as any external characteristics go. The birches, though of another species, are not greatly different from our New England birches in habit and general appearance. Page 783.

The prints reproduced on pages 751, 753, 755 and 757 were all awarded prizes in the recent competition of the Graf Optical Company, the first prize having been awarded to "Chemistry" by Paul Outerbridge, Jr. This is an excellent example of the modern tendency to discover beauty in rather unusual line arrangements and in the fine technical rendering of textures and qualities. The surface values of the glass and porcelain are most successfully rendered in this picture, a tribute to the excellence of the lens. The complex arrangement of the lines bears witness to the artistic ability of the maker, for the happy arrangement of these variously curved objects undoubtedly required much time and experiment. It does not seem to us that a picture of this type will give much lasting pleasure, nor would it be accepted as a suitable wall decoration by any one but an enthusiastic chemist, but the man who can solve this problem of spacing satisfactorily has it within his power to produce other photographic results which will be pictures rather than experiments in pattern.

Mr. Alcock, in his "Landscape," has taken materia as difficult and uncompromising as the mortar and the retort, and has also woven them into a pattern which is attractive. It comes somewhat nearer the right to be considered as a picture, but it is too mournful and gloomy in its essence to make the beholder permanently happy and, although it expresses a mood which is worthy of representation, can only be considered as a successful experiment for the portfolio and not as a true picture.

"Industry," by J. R. Mason, is the record of a passing moment which has some interest and attractiveness but which is also a mere glorification of ugliness and an attempt to gloss over what at best is but a blot on the face of the earth by producing from it a simplified rendering which shall not be inordinately offensive. The pictures of this type, slangily designated as "big business pictures" in pictorial circles, may serve as interesting records of our complex civilization and as specimens of the arrangement of lines in attractive patterns, but they will never fulfil the highest mission of photography or any other graphic art, which is to give lasting pleasure to passing generations.

"A Pose," by T. O'Connor Sloane, does display one of the eternal verities, for, as long as man is born to live and love, the sensuous curves and rounded outlines of the human body will give pleasure to man and woman. The photography of the human body as a whole or in part, clothed or unclothed, will always remain a fit subject for photography, and a successful portrait of a human being which expresses character will always be a source of interest and admiration. Mr. Sloane's treatment of his subject is rather slight, his model is constrained and fearful of recognition, and the pose of the left hand is unfortunate, but the modeling of the torso has much of interest.

The "Portrait" by Minya Dührkoop-Diez on page 775 is a bit pasty and flat in tonal values, but is an excellent bit of posing and straightforward portraiture.



NOTES AND NEWS

SENSITOMETRY OF PHOTOGRAPHIC EMULSIONS, by R. Davis and F. M. Walters. Scientific Paper of the Bureau of Standards, Washington, D. C. Price, 35 cents.

This book contains 34 pages of text explanatory of the instruments and methods adopted by the Bureau, and 85 pages of test charts. Unfortunately, however, the results obtained are utterly useless to photographers because new standards have been adopted and the charts do not bear the names of the plates used. It may be argued, of course, that it is not the duty of the Bureau to act as a last court of appeal and that to publish a list of plate constants would land it in a veritable hornet's nest of protests from manufacturers. On the other hand the authors admit that a standardization of photographic testing is desirable, and their basic idea in publishing this paper is that some of their methods are of sufficient novelty and merit to warrant their being used as a possible means to that end. They adopt the revolving sector wheel, although this is now discredited on account of the intermittency error, which they admit, but justify its use on the ground that this error is less than the variation due to the coating of the emulsion. The light source adopted was a 6 to 8 volt Mazda automobile headlight operating at 2.4 amperes, to which was fitted a compensating filter that reduced it to 2.73 c. p.; its effective candlepower being 1 candle-meter-second at the plate. The longest time of exposure was 8 seconds, which is far too short to be of real practical value in the testing of plates, and is again contrary to the usual custom, which is to expose for 40 CMS. It is a pity too that the composition of the filter is not published, as this would be really useful. Nor does there seem to be any logical reason why the usual compensated acetylene light should not have been adopted. Fog is plotted against gamma, and the reason for this is stated to be that it is well known that the density of chemical fog increases with the time of development and accordingly with the increase of contrast. The latter is the most important factor, according to the authors, in choosing a plate, and since the photographer must develop a plate to a certain contrast, what he wants to know is whether one plate fogs more than another in being developed to a given contrast. The practical answer to this argument is that probably not 10 per cent of photographers have the slightest idea of what gamma is and probably not one in a million has the means for measuring it; whereas they can all measure the time of development. Ergo, the commonsense method would be to plot fog against time of development.

Practically the method adopted requires two charts, one to plot fog against gamma and the other for the plate speeds, while in the standard H. & D. method both may be plotted on one chart. The authors also entirely ignore Hurter & Driffield's method of finding gamma, and one can only assume that one has to measure the tangent of the angle of

the straight line portion of the curve with a protractor to find this, while it is an easy matter by the H. & D. method even for the veriest tyro, as it can be done automatically on the chart.—E. J. W.

DEUTSCHER CAMERA ALMANACH, 1922; published by Union Deutsche Verlagsgesellschaft, Zweigniederlassung Berlin. Price to import \$2.00.

The literary contents of this annual visitor deal chiefly with the artistic rendering of various phases of photography, with practical hints on the same; ranging in subjects from the artistic in landscape work to figure and child studies. Only one purely technical article is included and that deals with the desensitizing process, from which we learn that the Hoechst Farbwerke have introduced a new violet dye, safranin JIV, that stains the gelatine but slightly and is readily washed out. A very brief and incomplete summary of the technical progress of the year is given. The most interesting part of the work is the illustrations, one on every page, and these give one a very good idea of the average work in Germany.

THE SPECTRAL TRANSMISSIVE PROPERTIES OF DYES, Bureau of Standards Scientific Paper No. 440. Price 15 cents.

This booklet by Messrs. Gibson, McNicholas, Tyndall, Frehafer and Mathewson deals with the absorption spectra of the seven dyes that are permitted in foods, naphthol yellow S, orange 1, amaranth, erythrosine, indigo, disulpho acid and light green SF. Some of these have a photographic interest; but the important point about this publication is that it is the first monograph of a series which the Bureau of Standards aims to publish and it contains a very complete description of the methods and apparatus employed in this work. There are, of course, works like those of Uhler & Wood, Formanek and Mees, all good so far as they go, but none of them is so exhaustive as this work promises to be, for the Bureau plans to publish from time to time accurate quantitative data on the spectral transmissive properties of dyes as well as other substances in the ultra-violet, the visible and the infra-red spectrum, as a part of its color-standardization program. To all those interested in the subject this work can be warmly recommended.—E. J. W.

Recent additions to the membership of the Associated Camera Clubs of America are the Camera Club of Cincinnati, Ohio, with headquarters at the Arno Building, cor. Fourth and Sycamore Sts., Cincinnati, Ohio, and the San Diego (Calif.) Y. M. C. A. Camera Club.

The A. C. C. of A. Print Interchange in charge of Mr. E. Roy Monroe, of the Portland (Me.) Camera Club and the Lantern Slide Interchange with Mr. W. R. Frisbie, of the New Haven Camera Club, in charge, are now en route. Twenty clubs submitted sets of prints for the Print Interchange and fifteen clubs sent in sets for the Slide Interchange.

The Cincinnati Camera Club, while one of the younger photographic organizations, is making considerable progress under the leadership of Charles H. Partington. The Developer is the club paper and from the contents one will realize that its mission of "developing" is being achieved. Mr. G. A. Ginter is the Editor as well as Secretary of the Camera Club of Cincinnati. Other club papers issued by members of the A. C. C. of A. are The Glood-Glass, Newark Camera Club, The View Finder of the California Camera Club, The Accelerator, of the Southern California Camera Club,

The Exposure, of the Chicago Camera Club, and Bulletins by Orange, Elysian, Dallas and other clubs.

The Association to-day is comprised of thirty-four clubs in as many different cities. This list of members contains practically all of the well founded clubs in America which are co-operating for that promotion and cultivation of the science and art of photography.

While the prints awarded prizes and honorable mentions in our second Annual Competition were on exhibition in the Boston Y. M. C. U. Camera Club, the Reverend Henry Hallam Saunderson wrote for the *Boston Transcript* a review of this which, with some omissions, is reproduced below, for the reason that there are some thoughts in it of much broader application than a description of this exhibition:

That photography has become a fine art is proved again by the exhibition arranged by AMERICAN PHOTOGRAPHY. Sometimes the camera does particularly impressive work in presenting the feeling of space. Probably it is incidental, but yet it is significant, that the first four prize winners in this exhibition form a descending scale in the vastness of the scene.

Thus the first prize goes to John M. Whitehead of Alva, Scotland, whose picture "Across the Moor" suggests unmeasured distances. The winding road suggests endlessness. Great masses of wind-swept clouds suggest the width of the world. Undulating stretches of the moor, with a vast perspective, add to the impression of distance. A single house in the middle distance, the smoke from its chimney being driven by the wind, gives a human interest to the picture but conveys the thought of the vastness of solitude.

The picture which won second prize is remarkable also for its impression of solitude, having no human element in it. But its principal interest is in a winding stream with snowy banks. It is called "Winter Scene" and is by Raymond E. Hanson, a member of the Union Camera Club. A dense thicket of woods forms the background so that the picture has not the unlimited perspective of the winner of first prize. Again, however, the sweep of the wind is recorded, for the exquisite lines carved in the snow show its effect.

Narrower still is the scene portrayed in "April Sunshine, Pump Court, Temple," by George F. Prior of Chingford, England, winner of third prize. An area shut in by tall ivy-clad walls is in deep shadow except for sunshine, which filters through floating mists. The pavement is wet from rain which has just passed. There are little gleams of light from the newly opened leaves of the ivy. A tree, gaunt and black, is not yet in leaf. A human figure with an umbrella adds to the significance of the April day.

Narrowing the scene still further, the fourth prize picture presents just a human figure. The fine strong face confirms the title "Portrait of a Player," given by the artist, Wayne Albee of Seattle, Wash. A heavy, black cloak is in slight contrast with the unbroken deep gray of the background.

In looking at the most successful prints it is interesting to make a psychological analysis and to see how the effect of the pictures is produced. The best of them use very simple elements. Those crowded with detail are not so successful. The spectator is seeing, consciously or unconsciously, vastly more than is actually recorded in the picture that took first prize. Treeless undulating land, and dense masses

of cloud are actually pictured, with a road, a house, and a whiff of smoke. Nothing else whatsoever is physically present in the print. But the thought of the spectator goes on to add much. When the picture is remembered it is difficult to say what was contributed by the mind of the spectator and what was physically recorded in the print.

Scores of pictures in this exhibit might be used to illustrate this important truth. One of the greatest achievements of work of art is that it starts psychic processes in those who look upon it, these processes being often so subtle as to defy analysis, and often being creative to a high degree so that the spectator becomes a collaborator with the artist. When photographs do this, it is evident that photography has won the place for which it has long contended, as one of the fine arts.

The Dallas Camera Club continues to put forth at weekly or other intervals a very interesting and amusing mimeographed bulletin. From recent issues of this we learn that the club intends to incorporate and that its activities are varied and of such a nature as to keep its members continually interested in photography. Meetings, demonstrations, competitions and exhibitions are on the program and considerable fun is thrown in for good measurement. That the members love each other, as is the case of all well conducted camera clubs, is shown by the following clipping:

Once upon a time (as all good fairy stories should begin) a little photograph came down to the club rooms and was placed on the walls for the edification of the members. This little photograph had Aspirations—with a capital A. It honed to be Pictorial. It came of good stock, its development had been slow and even it was well fixed, and it really hoped that it had attained the class in which its distinguished brethren moved and had their being. But, said Morton:

"Now, if it had been retuned blue or green—"

"It should have been printed on Veltex," Belsher added.

"If he'd used a Protar," supplemented Schoff, seriously.

"It's not too fuzzy enough," Brown disagreed.

"It might have made a good lantern slide," thought Sutton.

"He should have made a stereo," said Martin.

"It's rotten," snarled Minor, summing up the opinion of the crowd.

And the poor little photograph, sadly disillusioned, went home and was buried in the bottom of a trunk never to see the bright sunshine any more.

MORAL — Pay no attention to what the other fellow thinks of your picture. A camera bug is the most opinionated critter on earth.

The Boston Y. M. C. U. Camera Club is quite up to the minute in its activities. It not only exhibited AMERICAN PHOTOGRAPHY prize pictures during the month of October but it secured the reproduction of eight of them as a full page in the rotogravure section of the Boston *Sunday Herald* and announced the exhibition by radio to forty-five thousand listeners. It also arranged to have three ten-minute talks on photography broadcasted by radio on October 26, November 2, and November 9. The club has also produced ten rotogravure postcards of Boston which are undoubtedly the finest set of civic postcards yet produced in the United States. The subjects are typical of old Boston, and extremely

artistically done. The set of ten cards may be had for one dollar.

The California Camera Club is another one of those live institutions which publishes a regular bulletin known as *The View Finder*, four pages per month well printed and carrying enough advertising to help out materially on the cost of publication. The club has plenty of meetings, exhibitions, lectures and demonstrations, and evidently has a lively activity which makes for good fellowship and photographic interest. The following note on collapsible darkrooms is clipped from a recent issue:

The newest thing in the way of "photographic darkrooms is that designed by Chauncey M'Govern, the well-known handwriting expert and photographic illustrator of documents in dispute, now in use in his Hearst building studio in San Francisco.

The features of the newly installed darkroom are: (1) It is collapsible, — can be taken apart in 30 seconds; (2) It is as light as the proverbial feather. Being made of composition board, with redwood edges, one man can take it apart and lift it from its regular position in a sun-lit office, place it in an automobile, and set it up, unaided in a court-room anywhere, or in the woods. Also it "cheats the greedy landlord," inasmuch as it is readily moved by a tenant who has to vacate through increase in his rent. (3) It is cheaper, — the materials costing little or nothing; any ordinary person with a hammer and saw could make a duplicate; (4) It is unpainted, either inside or out, although Expert M'Govern uses it almost exclusively for developing panchromatic process plates of 11 x 14 size; and (5) It is well ventilated (without a fan), there being a double hooded intake at the bottom, with a triple hooded outlet at the top. The sides and top are merely "hook-and-eyed" together; the electricity cord enters through the ventilator and strips of carpeting around the bottom inside of each wall keep out all light, even when the floor or ground, or whatever the folding darkroom is placed on temporarily, is at all uneven.

That the folding darkroom is a positive practicality is proven by the fact that Expert M'Govern does nothing but highly scientific negatives and prints, — most of them "fotomicrographic," or made with a combination of 11 x 14 camera and microscopes.

The Photographic Society of Philadelphia whose club rooms are at 1615 Sansom Street will present the following one man shows, each lasting two weeks: Nickolas Muray, Starts October 30th. Arnold Genthe, Starts November 13th. J. V. Phelan, Starts November 25th. Armstrong Roberts, Starts December 11th. Maurice Goldberg, Starts January 8th.

Mr. Phelan is a pictorial worker with a local reputation. By profession an architect he has devoted considerable time to photography and brought to it the trained eye of his profession.

Mr. Armstrong Roberts' work will be found on many of the front covers of our popular sports magazines as well as *Country Life*. He works entirely outdoors and follows it professionally.

He recently gave a show of sixty prints at the Art Alliance in this city and was the first exhibitor of photographs to show there.

The Camera Club of Cincinnati, now about eighteen months old, appears to be an aggressive organization. It has meetings and workroom in the Arno Building, where it holds regular meetings on the first and third Mondays of the month. The officers and directors are as follows:

President, Charles H. Partington
Vice-President, Mrs. Alice F. Foster
Secretary, G. A. Ginter
Treasurer, Robert P. Nute
Harry W. Greene

Its bulletin, which is a four page well printed sheet, shows a popular mixture of information and humor. Here is a sample:

It happened at the outing. Our farmer friend had just pointed out to us an old shack, almost completely hidden in the leafage near the top of the hill, and told us the story of its having been raided but a few days before by revenue agents, who found a large moonshine still in operation there. One of our members listened to the tale open-eyed and open-mouthed, drinking in every word that was said.

We went down the road a short distance to take a picture of an old barn. Our mutual friend set up his camera and looked at the view on the ground-glass.

"Say, this fool picture is upside down," he said to me.

I looked at him with mingled feelings of scorn and pity.

"You poor fish, if you want to see it right side up, why don't you stand on your head?" I replied.

After much manoeuvring, he made the exposure.

"What time did you give that?" I asked.

"A twenty-fifth," he replied, "but I don't think that's enough. I'll double the next one; I'll give it a fiftieth."

"What! a fiftieth?"

"Sure a fiftieth. Can't you figure? Fifty is twice twenty-five, isn't it?"

He did it. In despair, I left him.

A week later, in the quiet of the Camera Club rooms, I sought of our friend an explanation. He attributed his conduct to the psychological effect which the tale of the moonshine still had upon him.

You may believe him or not, as you like. But if that young man could sell his imagination in these arid times, he could endow the Camera Club of Cincinnati.

The moral of his recital is that you can not be too careful about the water you drink at a club outing.

FORTHCOMING EXHIBITIONS

Place	Date
Fourth Buffalo Salon Closing date for entries, February 1st, 1923	March 1 to 31, 1923
Pittsburgh Salon Closing date for entries, February 5, 1923	March 2 to 31, 1923
New York Salon Art Center, New York	May, 1923

For information write to:

C. R. Phipps, Secretary
142 Dorchester Road
Buffalo, N. Y.
Chas. K. Archer
1412 Carnegie Bld.,
Pittsburgh, Pa.
Entries close April 5

Wollensak World

PUBLISHED BY THE
WOLLENSAK OPTICAL COMPANY
ROCHESTER, NEW YORK

DEVOTED TO
LENS AND SHUTTER
INFORMATION

VOL. II

DECEMBER, 1922

No. 12

Fitting the pocket-book as well as the camera

It is not often that we mention price in connection with Wollensak products, for they are sold purely on a basis of quality and their ability to produce results.

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THE XMAS GIFT UNIQUE

Our Third Annual Competition

For the encouragement of pictorial photography the publishers of AMERICAN PHOTOGRAPHY have instituted an annual competition in addition to the various monthly competitions now held. The closing date of the third competition will be February 1, 1923. The rules of the competition are as follows:

1. Eligibility.—The competition is open to any individual photographer in the world, without entrance fee or restriction of any kind, except that employees of AMERICAN PHOTOGRAPHY or members of their families are not eligible. No contestant is required to be a subscriber to AMERICAN PHOTOGRAPHY. Joint entries are not eligible. No more than 5 prints should be submitted by one entrant.

2. Character of prints.— Prints on paper made by any photographic process except blue printing may be entered. The exposure must have been made by the contestant. Developing, printing or enlarging may have been done by another but as the pictorial character of the work will be the basis of judging, work done by commercial finishers is not likely to be of a character to receive high recognition. Hand-colored prints are not eligible.

3. Size of prints — Prints may be of any size desired by the maker, up to 11 x 14. They may be mounted or unmounted, but must not be framed. If mounted, the largest mount should be stiff enough to enable the print to stand on an easel. It is requested that no mounts larger than 14 x 17 be submitted. Prints should be carefully packed in cellular board and will be returned in the original wrappings. We accept no responsibility for damage to prints in transportation.

4. Titling. — Nothing but the title and sender's name and address may be placed upon the back. Full data should be filled out on the form below and any reasonable number of these forms will be sent on request. Prints may be regarded as ineligible if the data are not furnished.

5. Return of prints. — Prints will be returned only if request is made at the time of entry and if sufficient postage for their return is sent. They will be returned immediately after the judging, except those to which awards are made.

6. Foreign prints.— Owing to customs regulations prints from foreign countries should be sent not more than two in a package, not larger than 8 x 10 in size, and without writing. We do not undertake to pay duty on prints from abroad, but if sent as described above they will probably not be assessed duty, especially if marked "Amateur prints—no commercial value," on the outside of the wrapper.

7. Prizes: — Prizes will be awarded as follows:

First Prize.....	\$100.00 cash	Third Prize.....	\$25.00 cash
Second Prize.....	\$50.00 cash	Fourth Prize.....	\$25.00 cash
Fifth to Fourteenth Prizes	\$10.00 each		

The judges will also be authorized to award about fifty Honorable Mentions of the value of \$2.50 each, payable in subscriptions to AMERICAN PHOTOGRAPHY or books of our own publication. Prints awarded prizes are to remain the property of the publishers. Any prize may be declined, if the competitor prefers to retain the print. Prints awarded Honorable Mention may be reproduced by them if desired, but will be returned if request is made.

8. Judges — The judges will be photographers, artists or critics of repute, their names to be announced later.

9. Exhibition. — The publishers of AMERICAN PHOTOGRAPHY reserve the right to retain prints deemed worthy of exhibition for a reasonable period, and will endeavor to arrange public exhibitions of the best prints before several Camera Clubs in Boston and elsewhere, as soon as possible after the closing of the contest.

10. Forwarding.— Prints must be forwarded to AMERICAN PHOTOGRAPHY, 428 Newbury Street, Boston 17, Mass., express or postage prepaid. Closing date is February 1, 1923.

Title.....Where Made?.....

Maker's Name.....

Address.....

Return or not?.....Amount of postage inclosed.....Camera....Size.....

Lens.....Focal Length....in. Stop used, f:.....Filter.....times

Date.....Hour.....Light.....Exposure.....

Brand of film or plate

Developer

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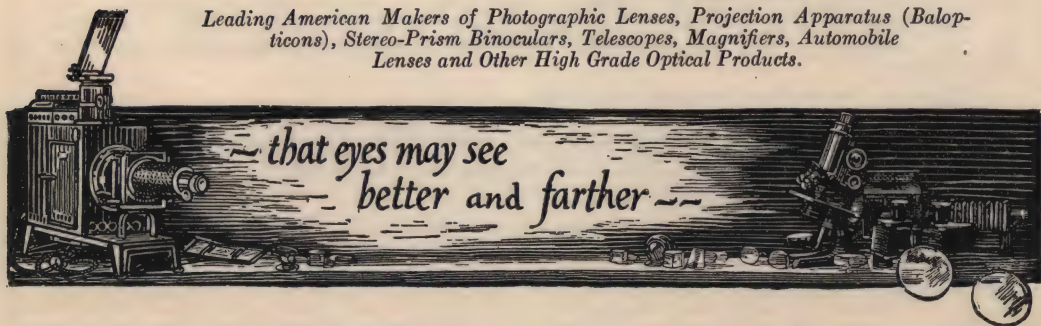
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Bones and muscles have been given new names, easy to recollect and associate with their use, shape or location. The Atlas bone, for instance, has been called the nodding bone, because by its structure and contact with the skull, it controls the movement by which we nod and shake our head. The axis bone has been renamed NO bone, because the construction of this bone enables us to turn the head

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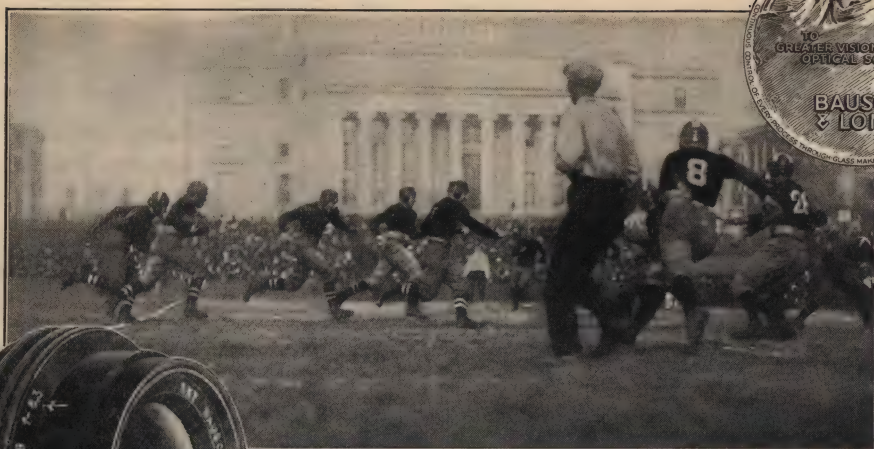
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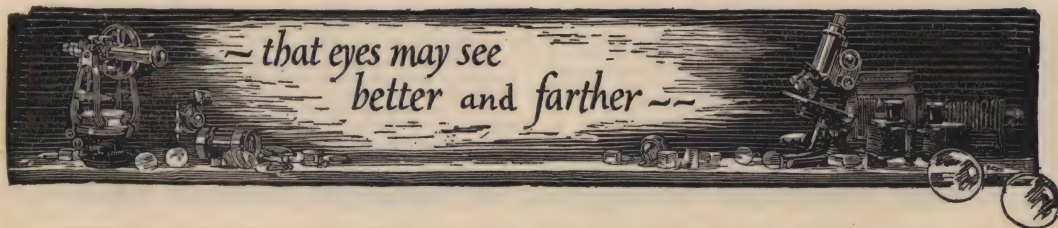
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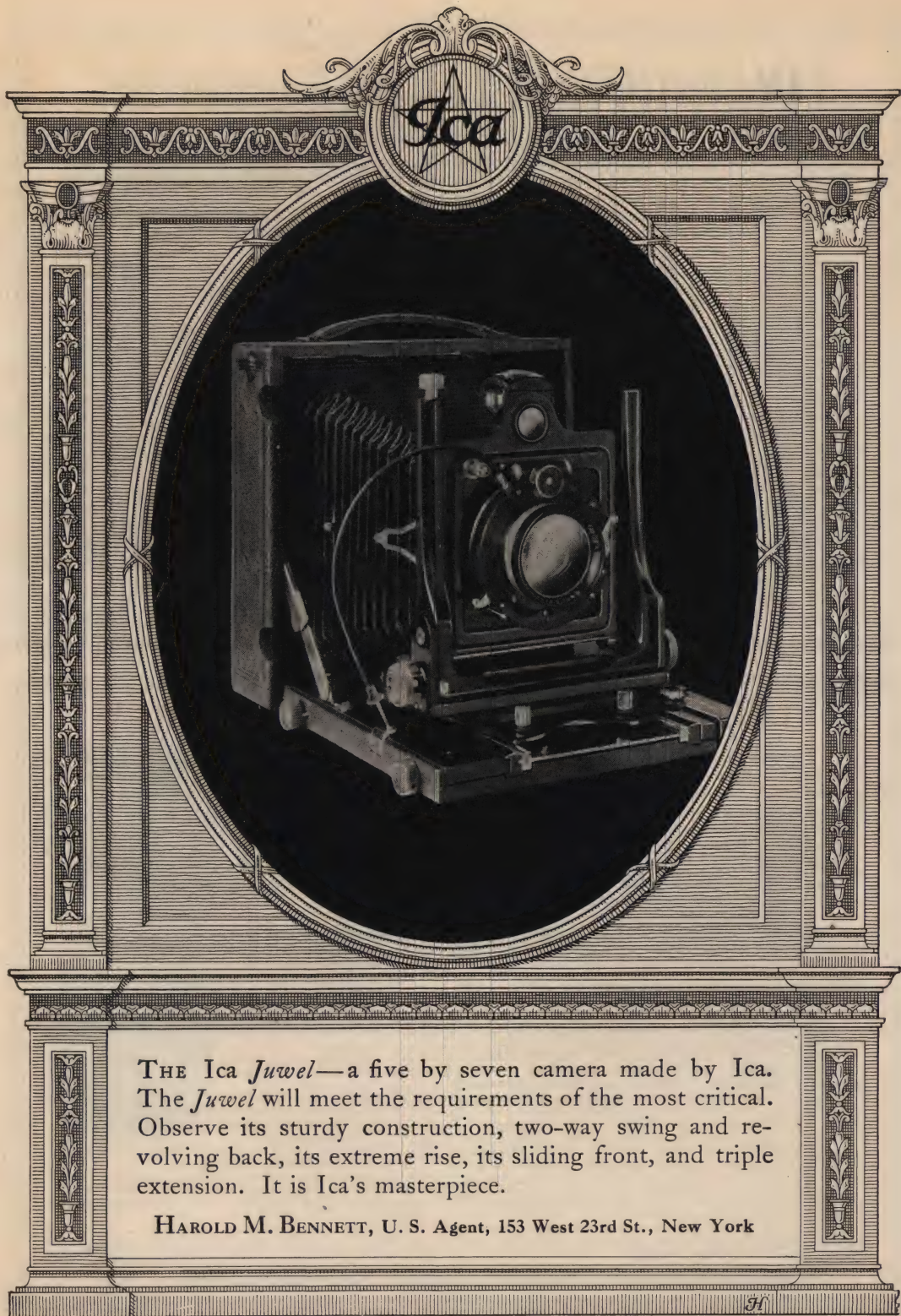
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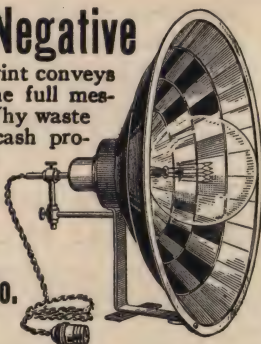
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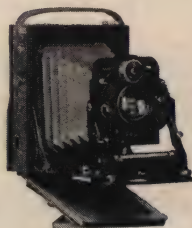
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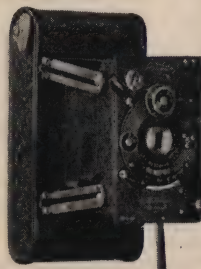
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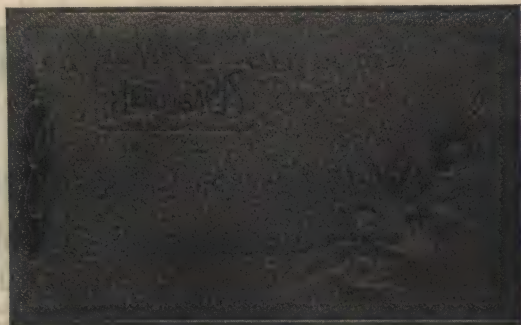
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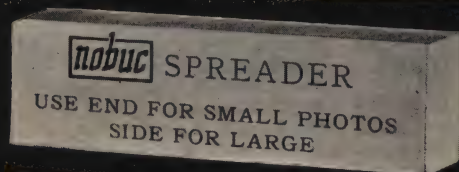
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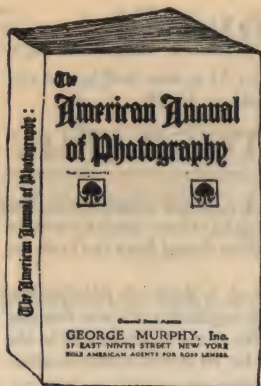
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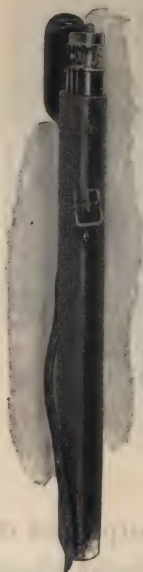
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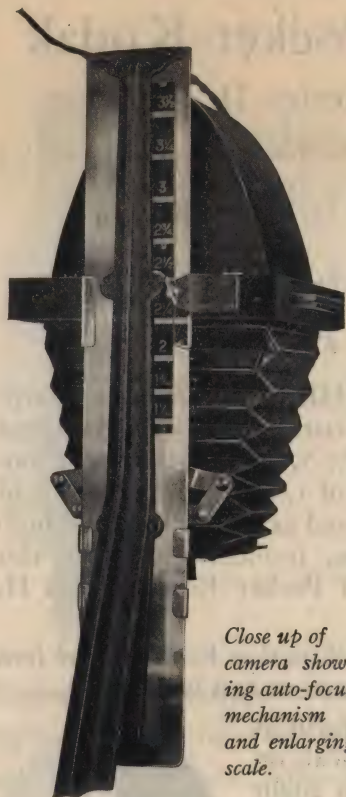
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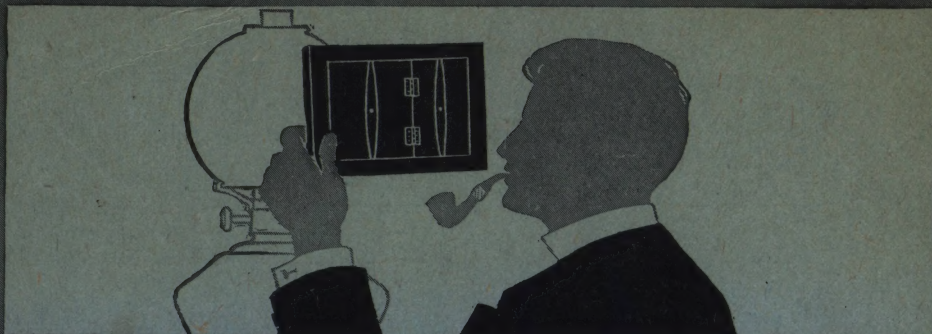
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